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Training the Environmental Archaeologist*

by G. W. DIMBLEBY

This sounds a dull subject for a presidential address, but I have chosen it deliberately to highlight a crisis which has developed in archaeological science in recent years and which is now acute. The implications of it and possible solutions to it affect not only those engaged in practical or academic archaeology, but also young people still at school who have not yet decided what courses are open to them at the university.

Quite simply, there has been a science explosion in archaeology and we do not know how to contain it. Up to the last war it was exceptional for the archaeologist to receive help from the scientist. After the war, however, various sciences developed techniques which, applied to archaeological problems, shed new and unexpected light on our understanding of the archaeological sites: new methods of chemical and physical analysis, the identification of organic remains whose presence had not even been suspected, and above all, the development of radiocarbon dating. These new techniques were not always received with open arms, and it must be admitted that some of them misfired somewhat in the early stages, but in the course of time some degree of reliability was achieved and the results of these techniques were accepted. In the last decade the emergence of rescue archaeology has greatly extended the number and range of sites calling for scientific investigation and this has added to the demands confronting the scientist.

There are those who see this application of science as an intrusion into what they hold to be a purely cultural study of man; they deplore this 'new archaeology'. To me it seems an entirely appropriate development; as new methods of investigation become possible (excavation is only a method of investigation) and can contribute to our understanding of our own antecedents, it would be intellectually unjustifiable not to use them.

Whatever the reservations of the archaeological purists, their view hardly seems to have been shared by the majority of field archaeologists, and herein lies the root of the crisis to which I have referred. This is epitomized in my own experience since I came to the Institute of Archaeology in 1964. At that time we were beseeching archaeologists to take note of the fact that sites contained not just flints and pots, but also bones, charcoal, seeds, raw materials of various sorts, etc.; if our point was accepted, it often seemed to be regarded as irrelevant.

* Presidential Address to Section H (Anthropology), British Association for the Advancement of Science, Lancaster, September 1976 (by permission of British Association).

Today scientific investigation of such things, and especially the value of scientific methods of conservation, is accepted as a matter of course. Indeed it has almost become the cachet of an archaeological report that it should carry one or more scientific appendices at the end, irrespective of whether these are referred to in the main body of the report. We are now hoist with our own petard: having urged excavators to look for this evidence in their sites, they have at last taken us seriously and are finding it in unexpectedly large quantity and variety. They now turn to us and say 'You asked us to find it; now who is going to analyse it for us?'

These, then, are the elements of the crisis, which has taken us all by surprise. In order to meet it, 3 steps are vital: (a) some selection or control of material submitted for analysis; (b) an increase in the number of people able to carry out analytical work; and (c) provision of financial resources to support the work. The first point (a) is being considered in other quarters, and is beyond the scope of this address. Point (c) too, is not our concern here, though it may be remarked that the days of 'farming out' this work to the universities or natural history museums are over; the sheer volume of work that needs doing has defeated that approach.

My concern in this address must be confined to the problem of training archaeological scientists. I shall concentrate on the environmental sciences since this is the field that I am personally involved in, but the principle of what I want to say applies, with the emphasis in different places, to the other branches of archaeological science no less forcibly.

Environmental archaeology

First of all, it is necessary to evaluate the nature of the environmental work to be done; then we can consider the types of scientist that are necessary, and from there go on to consider their training for this work.

It is not possible to give a very precise definition of environmental archaeology. Rather the subject is a spectrum; at one end is the answering of the archaeologists' immediate questions, such as 'what species are these seeds/snails/charcoals, etc.?' Some such questions are not strictly environmental: 'What wood is this artifact made of?' However, the same specialist is involved, so it is reasonable to include such questions. But there are also questions to be asked that would not come from the archaeologist but from the environmental scientist himself. My own first contact with archaeological sites was to examine the soils beneath round barrows in order to compare them with the modern soils, on which I was working. Archaeology in the narrow sense did not come into it: all I needed to know was the approximate date. At that time it hardly occurred to me that the archaeologists would be interested, but in due course our interests converged. Conceivably there are research interests that can have little direct relevance to archaeology but which might be able to draw upon evidence preserved in or beneath an earthwork. In this sense an archaeological site may be of scientific value quite independent of its archaeological significance; sometimes I question whether archae-

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ologists should have the sole claim to ancient sites, particularly if they are going to excavate them totally – that is, destroy them.

To return to more practical matters, it does follow from this that the environmental scientist can do much more than merely answer the questions of archaeologists; he can formulate projects of his own, projects which may, when pursued over a number of years and a variety of sites, make a considerable contribution to archaeological knowledge. Consequently the environmental material from any one site should be seen not only as relevant to that site itself, but possibly of much wider significance, perhaps outside the concern of the excavator of that site. There is much more involved than what is sometimes referred to as 'scientific back-up', a term often not appreciated by environmental scientists with their own research interests.

I have referred to the disciplinary barrier between science and archaeology which some archaeologists feel; it would also be true to say that some scientists feel a barrier too, for rather different reasons – a point I shall return to. But there are other barriers; within the sciences we also have barriers of communication – the physicist and the biologist do not have much common ground and less common language. It has been said that we are all laymen when faced with disciplines other than our own. This is even true within the environmental sciences themselves – soil scientists, zoologists, botanists, geologists; in fact one of the aims in training environmental scientists is to enable them to cross the interdisciplinary boundaries.

There are then, different levels of environmental investigation in archaeology, and these can be treated under 3 main headings:

- (a) Identification of organic remains and other materials.
- (b) Evaluation of the identifications in terms of the particular site.
- (c) The contribution of this site to the wider body of environmental knowledge.

(a) will be carried out by the specialist in a particular field, but (b) and especially (c) may involve the synthesis of contributions from several of the environmental sciences.

Let us now examine each of these 3 categories in turn.

(a) Identification

Most archaeological sites can be made to yield some organic remains such as seeds, charcoal, pollen, bones or mollusc shells, as well as other features such as soil profiles and deposits. All of these require identification and description before they can be useful. As already pointed out, not all such materials are of environmental significance; on town sites, particularly, organic remains may be of cultural or technological significance rather than environmental, but they all fall to the biologist for identification.

There is so much of this type of work to be done that there is a tendency for anyone who can identify plant or animal remains to be pressed into service. I do not wish to disparage the amateur or even the professional who turns his attention to archaeological material but it has to be said that there are different levels of reliability in identification; if the data are to be useful under the next 2 headings (b) Evaluation and

(c) Wider significances, identification must be as taxonomically exact as possible. One hears of many cases where the archaeologist submits his seed material to an amateur botanist, or the bone material to the local vet., and one applauds the willingness of such people to help. But the pitfalls in such work are many; moreover, modern techniques of analysis make it possible to deduce so much more from the material than merely the species. For instance, bone analyses can yield information not only on the species present, but upon population structures (males, females, castrates, juveniles, domestication, herding and culling practices, butchery methods and so on).

Reliable taxonomy is crucial, and as taxonomists are continually modifying classification, anyone doing this work should be aware of the more important developments in his own field. He also has to have some awareness of the geographical history of species. In his 'History of the British Flora' Godwin (1975) refers to the records of charcoal identified as horse chestnut from British prehistoric sites; as this species was probably introduced into this country only a few centuries ago, such identifications must come under close scrutiny. More misleading than an apparent error of this sort is the 'near miss'; not only is the truth never established but an error is perpetuated because it gave no cause for suspicion. These strictures are not intended to deter people from undertaking this type of work, but to remind them of the obligations which it involves. In dealing with poorly preserved or incomplete material there is a great temptation to make a positive identification when a more tentative one would probably be safer, and the archaeologist sometimes presses for something definite which he can quote. Ancient material often offers problems not met with in fresh material, and inevitably we make mistakes in acquiring experience. I stand before you convicted out of my own mouth.

A trend which has developed recently is the investigation of archaeological material by students as projects. This is done not only in university departments but also increasingly in the polytechnics, which frequently have good scientific equipment available, and sometimes under-used. Inevitably there are risks in the analysis of material by students under training, but this can be offset by close supervision. The weakest part of such a project may be the final report, for the student lacks the breadth of knowledge for a full interpretation. It is therefore desirable that before publication the reports on such work should be checked and amplified by an experienced referee.

One development arising from the crisis in the environmental work gives me cause for alarm. Some archaeologists are 'acquiring' specialisms such as bone analysis, seed analysis, etc., even though they have no scientific training. Several have told me that by doing this they think they will have an advantage in the job market. I do not rule out self-instruction, but it has its obvious dangers and carries extra responsibilities. In some cases it is apparent that those seeking to acquire such expertise have no understanding of what environmental archaeology is. In one case I met the environmental remains were likened to flints or potsherds — all they needed was typing, describing and listing. If this makes the archaeologist squirm he may have some idea of what the environmentalist feels.

(b) Evaluation

Assuming that the identification work has been as correct as possible — the state of the preserved material may apply limitations — the next stage is the interpretation of the results in terms of the site itself. In the environmental field this is usually an extrapolation based upon the known ecological requirements or tolerances of the species found. This requires an understanding of the ecosystems in which plants and animals live and the degree to which they are restricted to certain habitats. A species like a carnivorous mammal may range over several ecosystems, but a small herbivore may be very closely restricted to a particular one. The latter is therefore a much better indicator species than the former.

At this level, too, it is necessary to be able to handle material from different disciplines. The seed specialist, the bryologist, the entomologist or the conchologist may all furnish lists of species, but it requires ecological knowledge (which they may or may not have) to synthesize these in terms of one or more ecosystems. The archaeologist wants to know, for instance, that in the vicinity of his site there was arable land, heathland, or scrub woodland, and how near or remote these communities were.

(c) Wider significance

Here we move into an area of less direct value for the archaeologist digging a particular site, though often the conclusions are of great interest to archaeology at a wider level. For instance, in my own work on buried soils, many observations on individual sites were eventually put together to form a pattern which reflected man's effect on various environments through the prehistoric period. The identification of a now extinct beetle may not thrill the archaeologist on whose site it was found, but it may have, say, climatic significance of importance in the wider context. Again, the identification of weed seeds may shed some light on the land use at a particular site, but they may also tell us something about the history of the British flora and the hand of man in bringing species to these islands.

To extract such information involves familiarity with research trends and a corpus of knowledge which often have little to do with archaeology itself and may be carried out by specialists who themselves have no more than a nodding acquaintance with the detailed archaeology of the individual sites.

Training

Now we must come to the point of this address — how should we train the environmentalists for the range of work that I have outlined? It must be obvious that we are not training just one animal but a whole circus. As has been said, environmental studies are essentially interdisciplinary. This means that we need our botanists, zoologists, geologists and pedologists, but we also need those who can knit together these varied approaches and produce an answer intelligible to all scientists and archaeologists alike.

It cannot be over-emphasized that the situation demands fully trained people, at least to the level of a first degree in the environmental field. It is a widespread

misconception among archaeologists, not least those in positions of administrative power, that all we need are technicians who can do the necessary identification. As I hope I have shown, not only is a high level of taxonomic expertise necessary, but the wider ecological knowledge is essential if any useful assessment is to be made of the identifications carried out. I shall not return to this 'science on the cheap' attitude in this address, but I shall fight it wherever I meet it.

Granted, then, that a university education in the relevant sciences is necessary, how are our universities facing up to this requirement? I have checked through the UCCA handbook and find that there are 25 universities and colleges in the United Kingdom which teach archaeology; many more, of course, teach environmental sciences in one form or another. Of the 25 teaching archaeology, some are, of course specialized, in Classical or Chinese Archaeology, for example, and one would not expect them to undertake any environmental teaching, though it should not be forgotten that they, no less than other branches, are profiting from its results. The majority, however, teach archaeology over a wider spectrum, but the UCCA handbook shows that in only four are there combinations of courses that could produce a product who might be called an environmental archaeologist. (This is leaving out of account the Archaeological Sciences degree courses at Bradford; though these embrace a wide range of sciences, and clearly serve to meet the problems I am outlining as far as they affect the physical sciences, the environmental sciences element in them is still small.)

A number of university archaeology courses include some courses in environmental subjects, most commonly introduced in the early stages and before the course comes to a focus on straight archaeology. In some cases this is done through courses provided by the science departments, but in several universities these are joint-subject degree courses with geography, within the Faculty of Arts. Much depends here upon the geography syllabus; the environmental element varies greatly. In such cases the students will leave college with at least some awareness that there is an environmental element to archaeology, whereas in the majority of cases no such element appears to be introduced at any point in the training.

However, we are concerned with the training of those who are to become archaeological scientists in the environmental field. In broad terms there are 3 principal avenues leading to this status:

- (i) through a multi-subject degree
- (ii) through an integrated degree course
- (iii) by conversion from one of the natural sciences.

(i) Multi-subject degrees

In these courses archaeology and a science subject feature together throughout the 3 years, so that the graduate is qualified in a science subject in addition to archaeology; occasionally there is provision for a third subject to be taken for a shorter period.

The strength of this scheme is that the student is taught the science subject(s) in the

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appropriate science department or at least by the staff of that department. He can therefore be regarded as being well-grounded in that subject; this will stand him in good stead as an archaeologist, but it also means that if he does not wish to practise as an archaeologist he has a second string to his bow.

The potential drawbacks of the scheme apply mostly to his qualification as an environmental archaeologist, and they will differ in different universities. Generally speaking, science departments are not prepared to put on courses specifically for archaeologists; the archaeologists take the appropriate science course provided for two-subject combinations. As we have seen, this can be regarded as a strength, but it also has its limitations. Many departments teach the biological sciences with a strong emphasis on cell and/or molecular biology, whilst taxonomy is regarded as old-fashioned. The amount of ecology taught varies widely, as does the content of the ecology courses. Courses which devote a lot of time to field survey techniques are not of much practical help to the archaeological scientist; and it can be said of some ecology courses that they pay scant attention to the distant past — the most important ecological factor of the past 5000 years, man himself, is treated as an afterthought. Indeed it is perhaps significant that some geography courses give more attention to techniques such as pollen analysis than do the biological courses. In a number of cases geology is a usual joint subject with archaeology, and here too there may be limitations; Pleistocene and Recent geology may be given inadequate attention from the archaeologist's point of view.

I am not suggesting that those training as archaeological scientists should pick and choose just what is useful to them, but any course involves selection of material, and unless the courses have the archaeologist in mind, the balance achieved may mean that he is not adequately grounded in those parts of the curriculum which he is going to have to use. For this reason a more satisfactory way of teaching the science, as is done in at least one college, is for the science lecturers to give their courses in the archaeology department. Such a scheme will encourage courses tailored to the archaeological outlook, but it must be admitted that it is asking a lot of the lecturer to go to the trouble of preparing and giving such courses.

(ii) Integrated courses

Truly integrated courses are rare and understandably so. They involve teaching which interlocks a number of disciplines, and this makes special demands on the teaching staff who must know enough about other disciplines than their own so that co-ordination can be effective. An ecological basis is the obvious model for such a course, and this determines that a wide range of subjects must be embraced — botany, zoology, the earth sciences, as well as the human sciences, archaeology and human biology. It has been argued (not in this context) that such spread courses cannot be regarded as scientific because they do not permit the study of any one subject in depth. Personally I would refute this argument on the grounds that it is equally scientific, and often more difficult, to study natural processes in breadth. It is our failure to link our sciences with each other

and with the environment which is the root cause of the threat to the environment made by our present level of technology. It is a failing that can be traced back to prehistory.

A similar charge of unscientificity could conceivably be laid against this scheme of integrated teaching in the archaeological sciences, but having seen the products of such a course over a period of 7 years now, I would not regard them as any less scientific than those trained in other ways. It is not really for me to say, since this is the pattern of teaching which we practise in my own department, but our graduates are not noticeably inadequate compared with others of different backgrounds, and they have the strength of versatility.

Nevertheless, this scheme is designed to produce people with a particular outlook; they are well suited for work in archaeological science, though I would not call this a vocational training. In fact I regard it as a better education than the majority of straight science courses. But in so far as the graduate cannot wave a piece of paper saying he is qualified in a pure science, he probably suffers in competition for those posts outside archaeology (e.g. teaching) in which a straight science qualification would be regarded as desirable.

A criticism which has been levelled at this course by some of my archaeological colleagues is that it is too specialised. This has to be set over against the view that it may not be scientific enough. It is difficult to see how a course which is designed to co-ordinate several disciplines can be called specialised. There is less of an element of detailed analysis in it than there is in an ordinary archaeology course with its strong emphasis on such things as flint or pottery typology. After 1 year's archaeology plus 2 years' environmental studies, the graduates are still not adequately equipped to carry out specialist tasks such as the identification of pollen, seeds, snails, bones, etc. They have been given a broad base, but to become specialists they must build up on this by more detailed studies, for M.Sc., M.Phil, or Ph.D.

(iii) Conversion courses

A number of graduates working as environmental archaeologists have come in from one or other of the natural sciences. This has, in my experience, usually been done by enrolling for an M.Sc. or Ph.D. course during which archaeological as well as scientific studies have been undertaken. Though it might be thought that this approach might lead to rather narrow specialism, in fact I have not found this to happen. Perhaps it is that graduates who have the breadth of interest to encompass such an inter-disciplinary move have also the breadth of mind to break out of their own discipline and embrace other sciences. It is perhaps pertinent that some of our most distinguished archaeologists came to the subject after qualifying in some quite different discipline.

Research specialists

Environmental archaeology is, of course, not served solely by people coming into it by one or other of these avenues just discussed. The subject is greatly served by specialists working in many different fields and who are willing to be consulted over archaeological

material. Some of them are promoting projects for which material from archaeological sites is invaluable, and many have found that the evidence of past faunas or floras adds to the understanding of their own specialisms. Their training, of course, is no concern of ours in this context, but their position in the overall coverage of the environmental sciences should not be overlooked. One of our concerns is that they should not be bombarded with a lot of material which is not critically selected, and one way to achieve this is to have environmentalists and environmentally literate archaeologists operating at site level. This reminds us of the poor representation of environmental studies in our college courses to which I drew attention earlier. Although, as I pointed out at the beginning, there is a greatly increased awareness of environmental analysis on the part of many archaeologists, even these people seldom know enough about the subject to permit a meaningful dialogue between themselves and the specialists they ask to help them. Behind the partially aware are the much greater number who have been trained through courses which leave them scientifically illiterate.

However, it also has to be said that the dialogue would be facilitated in many cases if the specialist had more knowledge and appreciation of the archaeologist's point of view, and in particular the type of evidence which is useful in interpreting a site. Some specialists confine their work to their own laboratory and never visit a site. If they did not only would they gain some respect for and understanding of the archaeologist's field difficulties, but their own laboratory work could be enhanced in value.

School qualifications

We have seen that anyone trained specifically as an environmental archaeologist will have followed a degree course which has an element of archaeological theory and practice, with a particular emphasis on field sciences such as ecology. We have also seen that there are not many courses in British universities which he could take to get such a training. Yet the surprising thing is that these courses are undersubscribed. One-subject degrees seem to be preferred to the two-subject degrees, and it must be admitted that our integrated courses at the Institute of Archaeology have attracted only small numbers, though the standard achieved by the students has been high.

Is this due to a lack of interest? Or a reflection of a trend against science? Or is it that students and their careers advisers are unaware of this outlet for science students? A look at the qualifications required for entry to university courses in environmental archaeology will show that there is nothing exclusive about either the subjects or the standards required. Two, or more usually 3, 'A' levels are required in science subjects; the most useful ones are botany, zoology and geology, but the physical sciences, chemistry and physics, and particularly geography are quite acceptable. It has to be borne in mind that with the wide scope of the environmental sciences we cannot expect school-level background knowledge for the whole of the syllabus. This does not apply so much, of course, to 2 and 3 subject courses, where the second or third subjects are single sciences for which an 'A' level qualification will be looked for.

One recent development which, if it becomes widely adopted, could revolutionise the lead-in to environmental archaeology from school is the new 'A' level syllabus in Environmental Studies (Carson, 1971). It is planned as an integrated course from beginning to end, including the history of man, and human ecology as well as the physical and biological factors of the environment. It, too, has been criticised as being too broad in its coverage and therefore, by implication, shallow and unscientific, but it is the first real attempt to break down the boundaries between subjects which for so long have bedevilled all co-ordinated environmental work.

As for standards, these vary from university to university, but the levels asked for range between B and D, not all subjects being required at the higher level. This is normal for entry into most university courses in any subject.

Some observations might be added on the question of students' extra-curricular interests. Some personal interest in field subjects — botany, entomology, bird-watching, geology, etc. — establish a link which can be connected up with the university course-work, and particularly with field courses. Even though school courses may have included ecology, there is a general lack of knowledge of wild species, and an awareness of at least some of the wild life of the countryside is a great help. At a time when we are having a greater impact than ever before on our environment, ignorance of nature seems to have become a modern disease.

Another hobby interest which is sometimes offered is archaeology itself. The student may belong to a school society or to a local society, and have acquired several years' experience of excavations. This can be a valuable asset, but it can be a barrier; it depends upon the approach. If the student has been introduced to the wider view of man and his culture, this is fine, for it forms a basis upon which environmental teaching can be laid. If however, as is often the case, the student has become specialised in his interests, the mind can be closed to wider issues, not only environmental ones but even archaeological ones. I have known students who before they left school had an intense interest in Roman or urban archaeology and no interest whatsoever in other peoples or places. This often reflects the interests of the adults with whom they have been working, but the closed mind is incompatible with environmental archaeology.

Job prospects

Earlier I was pointing out that the amount of environmental work to be done in archaeology has increased to the point of an explosion which we are ill-equipped to cope with. The extent to which provision will be made to enable such work to be done is a question beyond the scope of this address: it has proved easier to get money for excavating sites than for dealing with the material which is excavated — a self-defeating attitude which must bear some responsibility for our present crisis, not only in the environmental field but also in conservation of artifacts. There is certainly the potential for permanent development of scientific work, but we cannot guarantee that it will become an open field.

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This may be one of the factors which has limited the intake of students for environmental courses — jobs can be found for excavators but not in the laboratory afterwards. This question of job uncertainty seems to be a major worry for parents of students who would like to opt for archaeological science, and pressure is put upon the students to opt for fields in which a postgraduate job structure is assured.

In this connection I can refer again to the point I made earlier, when discussing the different approaches to environmental training, namely the alternative employment that the training could lead to, particularly in teaching. It seems unfortunate that such considerations should have to be weighed up when the student wants to take up the challenge of environmental work and when so much of it requires doing.

Environmental archaeology as an education

I would like to conclude this address on a less mundane note than job prospects, important though these are. It has been shown that this type of training requires the following of university courses and cannot be seen merely as the acquisition of technical routines. It should be expected, therefore, that such training is an education, and not just preparation for a particular vocation. It is a common judgement on the part of scientists that archaeology is a narrow and dead subject, of no relevance to modern life. Having come into contact with archaeology from the sciences, I must refute such a judgement. Not only does the modern archaeologist deal with the pots and pans of ancient life, but he has to discuss such matters as human biology, crop selection and genetics, landscape changes and many other aspects which link up closely with scientific experience. Indeed, it is archaeology that has led to scientific advance in some directions; e.g. origins of maize, and radiocarbon dating, to mention but two. There is, of course, the narrow-minded archaeologist, who never lifts his head or his mind above the bottom of his trench, but he is now being left behind as the subject develops. I am increasingly struck, and humbled, by the ability of the modern professional archaeologist, trained in the humanities, to embrace concepts which are alien to his training, and to use them with understanding. This is most effectively done where matters of cultural significance can be illuminated by the scientific approach; for instance, the use of modern techniques of analysis of metals and other materials. Generally speaking the environmental background has not reached the same level of acceptance as an essential element in man's survival and development, though there are some notable exceptions. The increasing mass of data built up by the botanists, zoologists, and others is now offering a new type of diet for the archaeologist, and he is not slow to see its relevance.

What is now being built up is a broad and yet detailed view of man, his material and cultural development, and his relationship throughout time to the environment on which he depends and which he duly modifies. This intellectual structure is completely inter-disciplinary and as such must be of great educational value. I cannot think of any other field of study, except perhaps geography, where the different strands of learning and knowledge are more completely co-ordinated. Above all the appreciation of the past,

and the changes which have taken place in man and in his surroundings, is fundamental to our understanding of the present, a fact so often unrecognised by our modern technologists.

As teachers, we are still trying to find the best way of introducing students to this ideal; if we can succeed, I think we shall have found a pattern of education vital not only for archaeology but also relevant to living in the modern world.

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Rescue Archaeology in Sussex, 1976

A Third Progress Report on the Sussex Archaeological Field Unit

By

Peter Drewett (Ed), Owen Bedwin and David Freke

Introduction (Fig. 1)

Over the last two years it has become generally accepted that the random excavation of archaeological sites simply because they are about to be destroyed is neither academically desirable nor financially justifiable. From April 1974 to April 1976 the Sussex Archaeological Field Unit has been planning for the changeover from the simple rescue excavation of isolated threatened sites (Drewett, 1975a and 1976a) to research projects operating within a rescue framework. The establishment of the projects was arrived at by considering how best the study of specific aspects of particular periods could contribute to archaeological knowledge both in Sussex and nationally. Initially the choice of projects was decided upon without any reference to the rescue situation. It was decided that the four projects should stand up as academically worthwhile research projects in their own right. There are:

- (i) Neolithic and Bronze Age Settlements and their Territories
- (ii) Pre-Roman Iron Age Settlement in relation to Environment and Economy
- (iii) A Multiperiod Settlement Project based on Bullock Down
- (iv) The Origin of Sussex Towns Project

Having decided on the projects the Unit then undertook two broad surveys to locate threatened sites which could justifiably be excavated using rescue funds, but which fitted into the predefined research projects. An extensive survey of plough damage to known archaeological sites in Sussex (Drewett, 1976) and an archaeological survey of historic towns in Sussex (Aldsworth and Freke, 1976) were completed and published during 1976. The plough damage survey indicated that 38% of all known sites in Sussex are being actively destroyed by ploughing. From all these sites destined for destruction it was possible to define areas and sites which could fit into the research projects. Likewise, eight of the historic towns surveyed were shown to have major development plans and so sites can be selected to fit in with the research programme. The four research projects are scheduled to run initially for a five year period. Only at the end of this period can we be

1976 PROJECTS



Fig. 1 Projects undertaken by the Sussex Archaeological Field Unit, 1976.

1. Offham
2. Bullock Down Neolithic site
3. Slindon
4. Bullock Down Double Lynchet Trackway
5. Bullock Down Medieval Settlement
6. Seaford
7. Lewes
8. Winchelsea
9. North Bersted
10. Harting
11. Beeding
12. Ranscombe
13. Pagham
14. Alfriston
15. Crowborough

NEOLITHIC SUSSEX



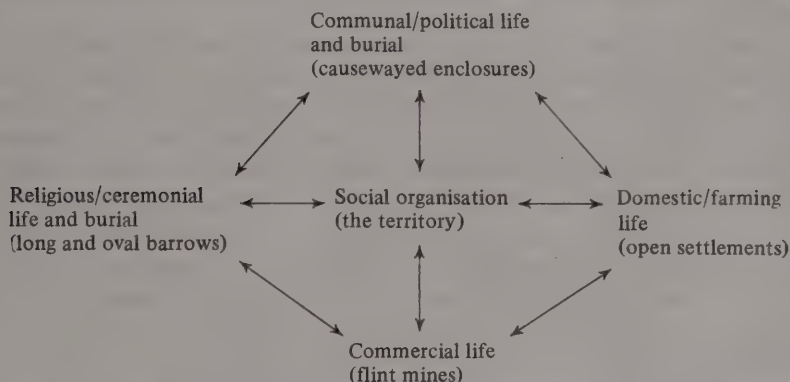
Fig. 2 Neolithic Sussex

certain whether or not such an approach is the best one to tackle the present crisis in field archaeology. Clearly, however, it is a sounder approach than the haphazard selection of sites that we have seen over the past decade.

NEOLITHIC AND BRONZE AGE SETTLEMENTS AND THEIR TERRITORIES (Fig. 2)

by P. L. DREWETT

The aim of this project is to establish a basic model of Neolithic settlement in Sussex through excavation and both extensive and intensive fieldwork and then to examine how, and if possible why, this pattern changes in the Bronze Age. The four main classes of surviving Neolithic sites in Sussex which perhaps represent the main aspects of Neolithic life may be summarised in the following diagram:



Five causewayed enclosures are known from Sussex. Two survive in West Sussex at the Trundle (Curwen, 1929a and 1931a) and Barkhale (Clipson, 1976) while three are known from East Sussex at Whitehawk (Williamson, 1930; Curwen, 1934a and 1936), Combe Hill (Musson, 1950) and Offham Hill (Holden, 1973 and see below). All the enclosures consist of irregular circles of discontinuous ditches. Barkhale has one circle, Offham Hill and Combe Hill have two circles, while Whitehawk and the Trundle have four circles. The function of causewayed enclosures is uncertain although a primary function as communal meeting places and exposure burial sites seems most likely. Evidence from Orsett (Essex) perhaps additionally indicates a defensive role. Evidence from Hambledon Hill (Dorset) possibly indicates a religious or ceremonial function, while evidence from Staines (Berkshire) may indicate a domestic function. It is likely, therefore, that these enclosures fulfilled a variety of functions during their period of use, but whatever their specific function, they clearly indicate well organised communal work and therefore some form of political organisation.

No systematic work has yet been undertaken on the open settlement sites in Sussex, although evidence for such sites has been found by accident, while excavating sites of later periods. The existence of such sites is often marked by pits, possibly originally dug for storage. Later ploughing on these sites has probably removed any traces of buildings (Field, Matthews and Smith, 1964). Pits have been found at New Barn Down (Curwen, 1934b) and Bishopstone (Bell, 1976). The existence of further open settlements is suggested by the discovery of Neolithic pottery at Selmeston (Drewett, 1975b) and Castle Hill, Newhaven (Field, 1939) and concentrations of Neolithic worked flint on Lynch Down (Bell, 1975), Hobbs Hawth, South Hill, Crowlink, Falmer Hill (Drewett, 1975c) and Bullock Down (see below).

Although most evidence for Neolithic settlement has been found on the Chalk Downs, increasing evidence for settlement is being found on the Ashdown Sands in the centre of the Weald. A series of concentrations of Neolithic flintwork has been found in the Medway Valley near East Grinstead (Tebbutt, 1974), while Neolithic pottery from High Rocks, Tunbridge Wells, indicates some use of the Wealden rock shelters (Money, 1960).

Grimsell (1934) lists 13 long and oval barrows: Alfriston, Stoughton I, Stoughton II, Litlington, Firl Beacon, Cliffe Hill, Money Burgh, Long Burgh, Rottingdean, Windover Hill, Hunter's Burgh, Beverses Thumb, and Preston (?). Plans of 5 of these were published by Toms (1924) and 2 further plans were published by the Curwens (1922). During 1974-5, 5 more possible examples of oval barrows have been found at West Marden, Phillis Wood, Bullock Down, West Dean and Slindon (unpublished, but see III below). Only 1 Neolithic barrow has been excavated in Sussex. The oval barrow at Alfriston, excavated in 1974, was found to consist of a simple dump mound derived from material out of flanking ditches. It covered a single burial pit containing the crouched skeleton of a young female. An antler pick from the ditch gave a C-14 date of 2360 ± 110 bc (Drewett, 1975c).

Although the only excavated example from Sussex is clearly a burial mound, evidence from elsewhere would suggest that some Neolithic barrows were not built primarily for burial, but were constructed to fulfil some ceremonial or religious function.

There are now 11 known areas of Neolithic flint mining in Sussex. These range from the massive mining complexes like that at Harrow Hill with over 160 shafts (Curwen and Curwen, 1926) down to a single shaft at Slonk Hill (R. Hartridge, pers. comm.). Other flint mines are known from Long Down (Salisbury, 1961), Blackpatch (Goodman, 1924), Cissbury (Stevens, 1872, and Curwen, 1931b), Windover Hill (Curwen, 1928), Church Hill, Lavant Down, Stoke Down, Bow Hill (Curwen, 1929b) and Compton Down.

During 1976 three sites were selected as part of this project. Firstly a large scale excavation was undertaken at the causewayed enclosure on Offham Hill. This was selected because, although superficially grouped with the excavated Sussex examples like Whitehawk and the Trundle, its size and situation are very different. It was considered essential to establish whether or not we should attribute the same function to the massive, complex structures like Whitehawk as to the flimsy little structures like Offham.

The rescue reason was simply that of extensive plough damage following scrub clearance and some levelling.

Secondly, a preliminary excavation was undertaken at one of the large concentrations of Neolithic flintwork known on the South Downs. These sites are thought to be settlement sites, although it was feared that ploughing may have destroyed virtually all traces of the settlement except for the plough-disturbed flintwork. The site, on Bullock Down, was selected as it also fitted into our Multiperiod Project. Thirdly, a trial excavation of a suspected, but badly ploughed oval mound at Slindon underlined the dangers of field survey when not backed up by, at least, trial excavation. The mound, superficially almost identical to that excavated at Alfriston in 1974, was proved to be natural.

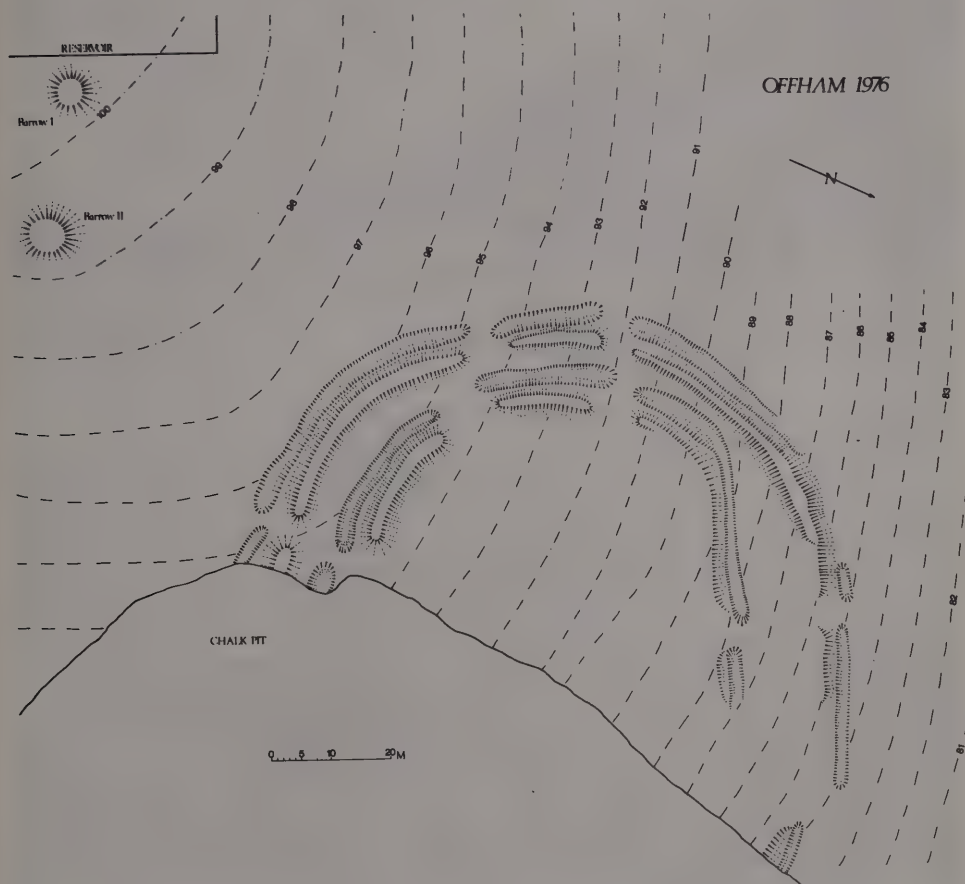


Fig. 3 Offham 1976. Plan of earthworks before excavations.



Plate I Offham 1976. Air view of the causewayed enclosure from the east. (Photo. D. J. Freke)

I. The Excavation of a Neolithic Causewayed Enclosure on Offham Hill, East Sussex

by P. L. DREWETT

The causewayed enclosure at Offham (Fig. 3) is situated on the slope of Offham Hill overlooking the River Ouse and the Weald of Sussex (Plate I). It consists of two rings of discontinuous banks and ditches. The eastern part of the site has been quarried away, but by projecting the line of the scarp slope from either side of the chalk pit it is possible to demonstrate that the circles may never have been complete. The site is most likely to have always been D-shaped, with the western side open as at Combe Hill.

Almost the whole surviving interior, together with about half the surviving ditches, were excavated during June and July 1976 (Fig. 4). The ditches appear to have been dug as a series of pits roughly linked in places and not linked in other places (Plate II). The bank, surviving only as a preserved rise in the chalk, appeared to be continuous adjacent to these minor causeways, which may perhaps be best considered as constructional features. The banks were, however, broken in three places (Fig. 4) adjacent to one minor and two main causeways. These may be considered as original entrances. The ditches were very slight, being a maximum of 90 cm. below the surface of the chalk. Allowing for solution of the chalk it seems unlikely that the ditches were ever much more than 1.50 m.

OFFHAM 1976

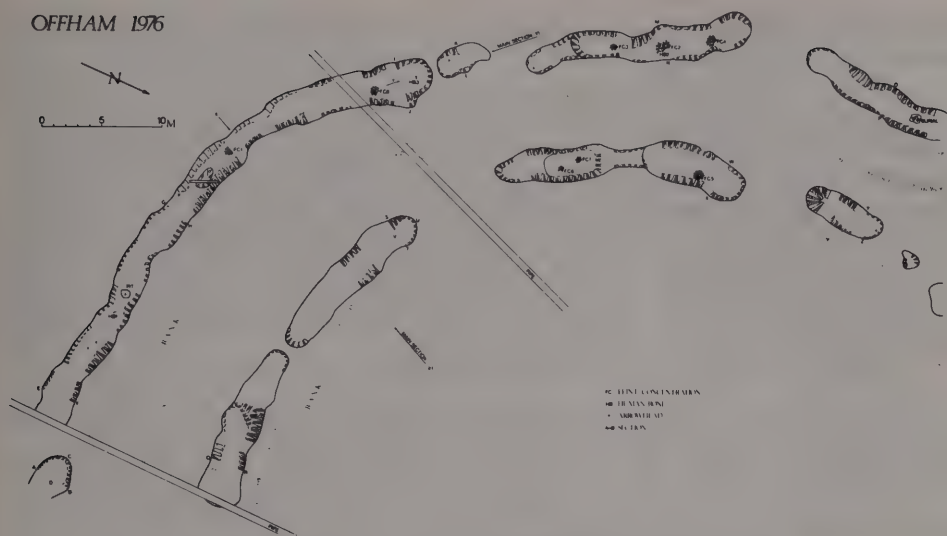


Fig. 4 Offham 1976. Plan of Neolithic discontinuous ditches.



Plate II Offham 1976. The discontinuous ditches from the south-east. Scale 2 m. (Photo. P. L. Drewett)

deep. All the ditches appear to have silted in naturally and all 34 sections recorded showed a very similar profile.

Most of the pottery, flints and bones found in the ditches appear to have arrived there as part of a gradual process of silting. Much of the little pottery found was very fragmentary and abraded, although a few larger, unabraded sherds were found in a shallow pit in the southern side of the outer ditch (Fig. 4). These sherds, with a row of perforations just below the rim are closely matched at Whitehawk (Curwen, 1936, Fig. 4). Other rim forms are better matched at Combe Hill (e.g. Musson, 1950, Fig. 3 No. 16). The pottery would therefore suggest a date for the enclosure broadly contemporary with Whitehawk and Combe Hill, perhaps in the early 3rd millennium BC. A little Beaker pottery was found in the upper silts of the inner ditch.

Flintwork was found scattered throughout the silts, although 8 concentrations were found in primary contexts (Fig. 4). Tool types included seven arrowheads, a polished flint axe, scrapers and serrated blades. A few animal bones were found, together with a crouched inhumation (Plate III) and fragments of disarticulated human bones (Fig. 4).

The interior of the enclosure produced only two certain postholes, although neither are conclusively Neolithic, a mass of tree holes and slit trenches filled with tin cans.



Plate III Offham 1976. Crouched burial in the outer ditch. Scale in centimetres and decimetres. (Photo. P. L. Drewett)

II. Preliminary Excavations of a Neolithic Open Settlement on Bullock Down, Beachy Head, East Sussex

by P. L. DREWETT

The eastern edge of Bullock Down Farm is capped with clay-with-flints. From this area have been found considerable numbers of fine Neolithic flint tools, including polished flint and stone axes, leaf shaped arrowheads, and scrapers (site 20 on Fig. 8). As this site is also within the area defined for our Multiperiod Settlement Project (Fig. 8), the site was selected to test the many theories about these apparently extensive, but singularly neglected, Neolithic sites. The most likely theory is that these surface concentrations of flintwork widely scattered on the Downs are the actual settlement sites of the people constructing the causewayed enclosures and long barrows and digging the flint mines.

The main problems with these sites are their size and the fact that most have been ploughed (Fig. 5). Aerial photography and geophysical methods both produced disappointing results, so the extent of the site had to be defined by the spread of flintwork. The broad extent (Fig. 5 — dotted margin) was defined by superficial examination and the distribution of earlier finds (notably by the present tenant, Mr E. D. Williams). Two of the ploughed fields were available for intensive field survey over the winter of 1975/6. They were gridded using a 30 m. grid (Fig. 5) and systematically walked. The results are being analysed in detail by Brenda James as part of an undergraduate dissertation. The surface collection revealed high concentrations of struck flakes, cores, axes, leaf shaped arrowheads, scrapers and serrated blades. It is proposed to continue this systemic field walking as further fields become available.

In the light of the field survey evidence it was decided to excavate 2 small areas (A and B on Fig. 5). The surface of the natural clay-with-flints was found some 27 cm. below the present surface. The modern ploughing appeared to go down some 20 cm., although abraded sherds of pre-Roman Iron Age pottery suggest earlier ploughing disturbing lower layers. The 2 trenches were excavated on a 1 m. grid, with the exact position of each flint and potsherd being recorded (Fig. 6).

The majority of the flintwork was found at the base of the modern plough soil. The high concentrations of flint flakes at the western end of trench B would suggest its close proximity to a flint working floor. A general scatter of flints was found in trench A. Having established that at least flints and pottery survive *in situ* below the present plough soil, it is clearly worth a more extensive excavation in 1977.

III. The Preliminary Excavation of an Oval Mound and Round Barrow at Slindon, West Sussex

by P. L. DREWETT

In an attempt to date an oval mound north of Gumbar Farm, Slindon, two trenches were excavated, under the supervision of Chris Preece, from north to south across it.

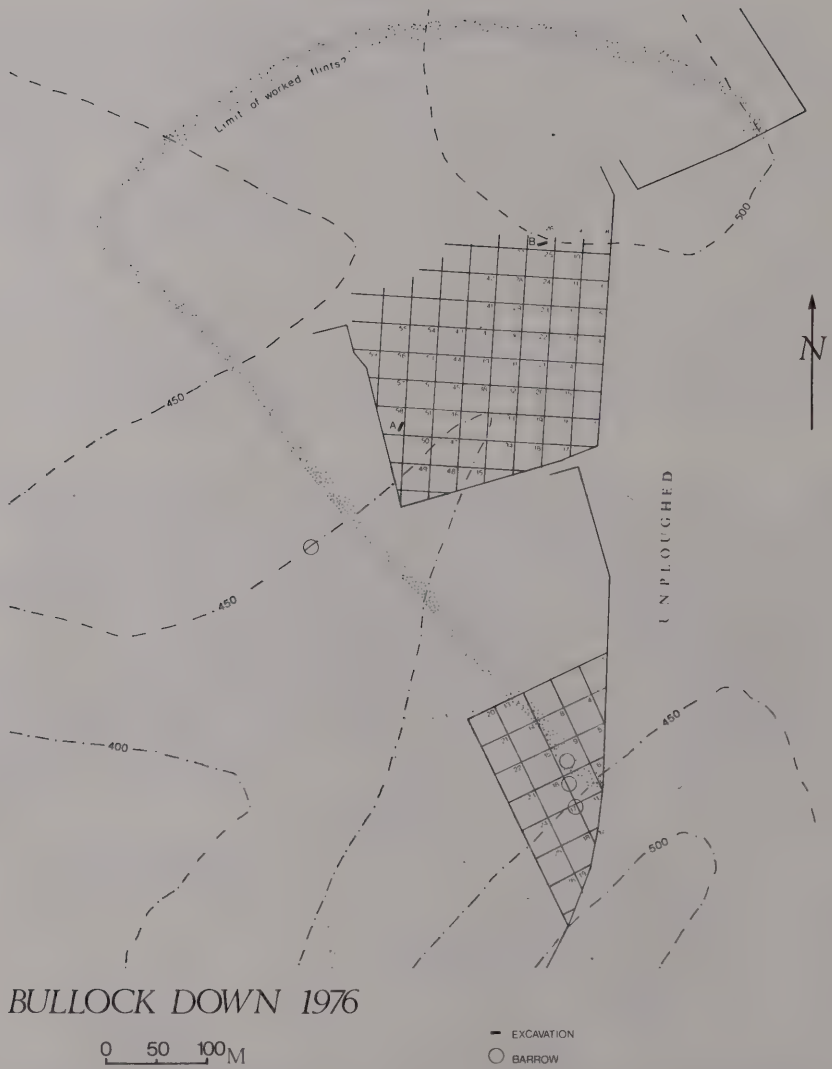


Fig. 5 Bullock Down 1976. Plan of Neolithic site as defined by flint scatter and position of field walking grid with Trenches A and B.

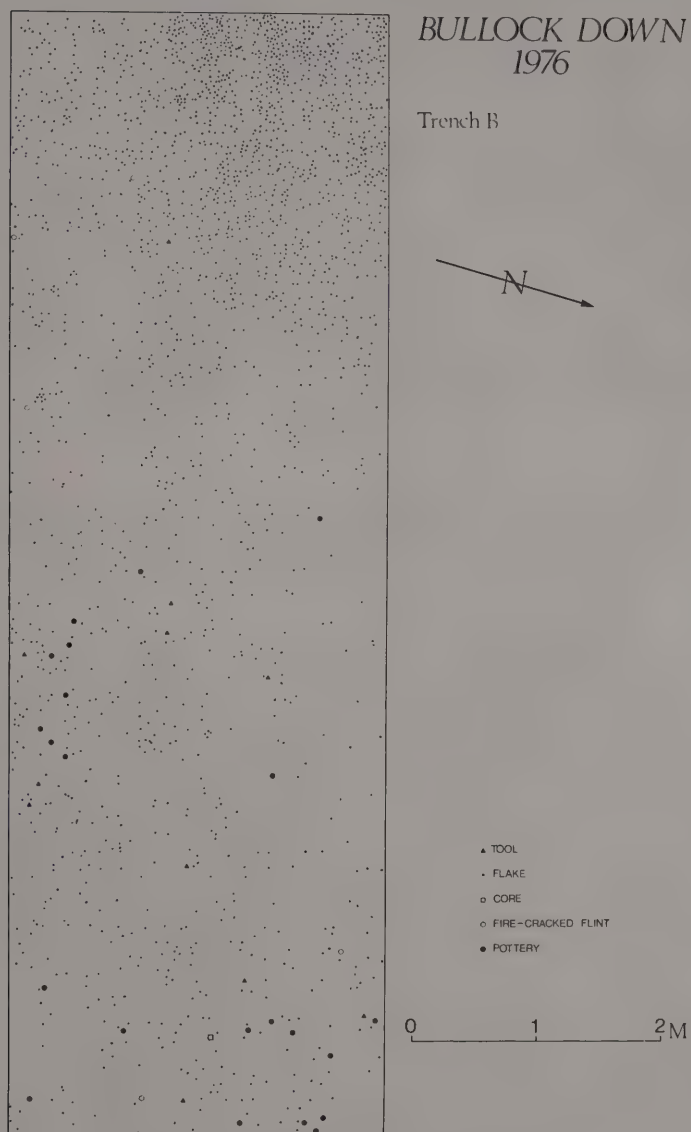


Fig. 6 Bullock Down 1976. Plan of Trench B.

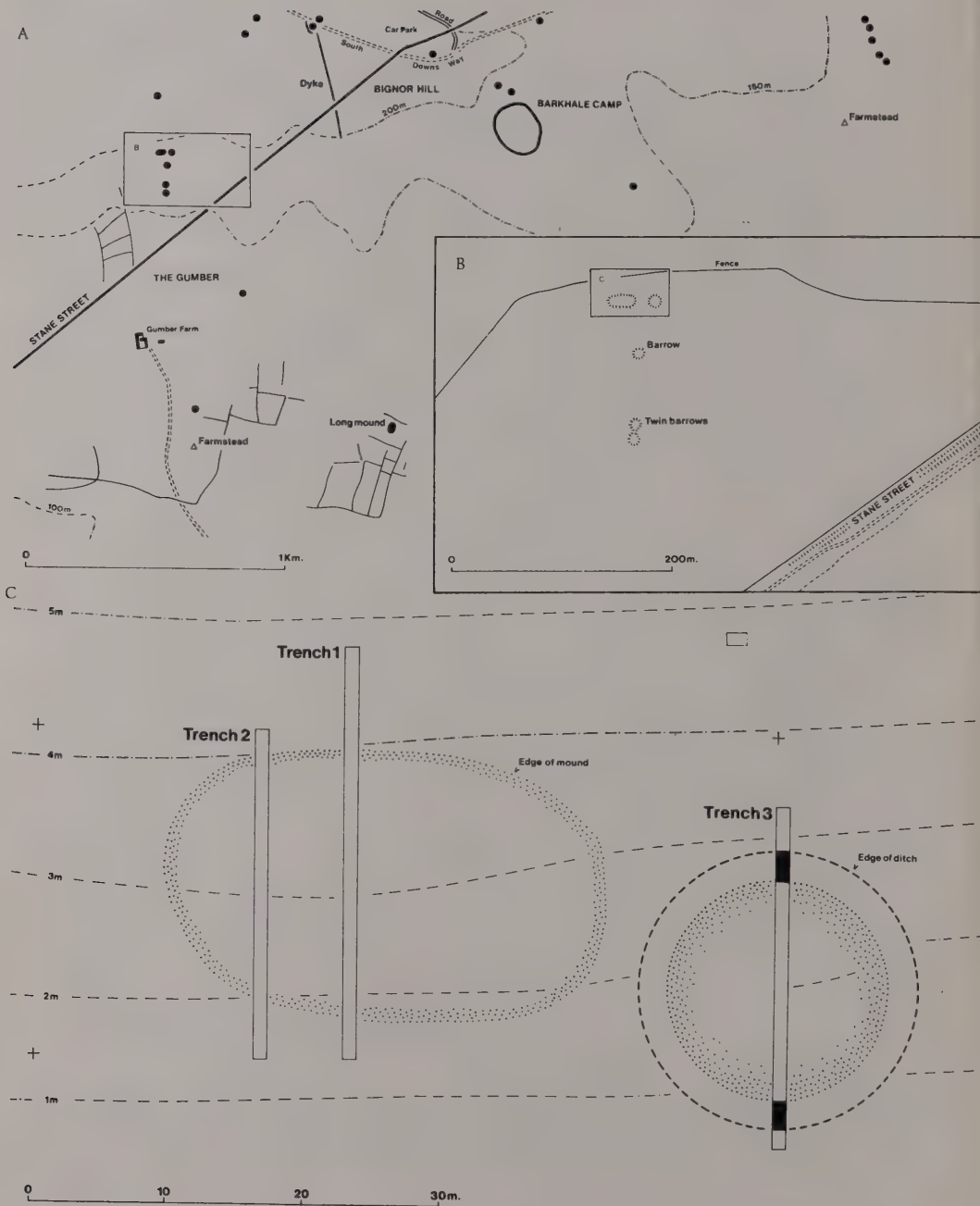


Fig. 7 Slindon 1976. Location of oval mound and position of trenches.

Superficially, the mound looked very similar to the oval barrow excavated at Alfriston in 1974 (Drewett, 1975c). As the mound was situated in a cemetery of round barrows (Fig. 7) it was hoped that it may have provided evidence of continuity from a Neolithic oval barrow into Early Bronze Age round barrows. The sections across the mound, however, showed that it was a residual mound of clay-with-flints. Although the profile was clearly natural, many of the surface flints had been worked.

The eastern end of the natural mound had been cut off to make a small round barrow. As the whole cemetery of round barrows has been virtually levelled by agricultural operations, it was decided to attempt to date this barrow by a single trench and a small area excavation on the mound. Little of the mound survived, and ploughing had destroyed the buried land surface. The chalk cut ditch was 2 m. wide and 1.30 m. deep. Unfortunately, no direct dating evidence was found, although the large quantity of struck flint flakes from the cemetery would perhaps suggest a Bronze Age date rather than later. Although this cemetery will now be levelled by ploughing, it is not proposed to undertake any further excavation as the primary objective of the excavations was the oval mound.

BULLOCK DOWN MULTIPERIOD SETTLEMENT PROJECT

by P. L. DREWETT

Over the past decade it has become increasingly clear that the concept of archaeological 'sites' as such is largely the creation of archaeologists and that any 'site' located is really part of a developing landscape. The excavation of isolated sites, whether settlement, burial or any other type of site, results in the creation of arbitrary divisions. The individual site may develop, prosper and decline, but it is rare for entire landscapes to be depopulated, although examples do of course occur. In most areas of Britain we can see a continuous organic development from century to century and millennium to millennium. The main purpose of the Bullock Down Project is to take one block of Downland and examine the continuous development of its landscape. The selection of Bullock Down was the result of several factors, not the least of which was the full and very active co-operation of the tenant farmer, Mr E. D. Williams.

Bullock Down is the block of Chalk Downland to the north of Beachy Head between East Dean to the west and Eastbourne to the east (Fig. 8). Although a strip around the coast is permanent grassland, the majority of the area is ploughed, which is resulting in the destruction of many settlement sites and their associated field systems (Drewett, 1974, 5.5). A pilot survey undertaken in 1975/76, together with previous survey work undertaken particularly by E. Williams, A. Holloway and R. Bradley, has indicated intensive settlement from the Mesolithic period onwards.

A Mesolithic flintworking site was partly excavated by R. Bradley at Belle Tout (TV 557 996). Here almost 3,600 Mesolithic flints were found during the excavation of



Fig. 8 Bullock Down 1976. Multiperiod survey. Sites 16, 20 and 43 were excavated during 1976.

the Beaker Settlement (Bradley, 1971). A few more Mesolithic flints have been found at TV 591 969.

Many Neolithic flints including polished axes, leaf shaped arrowheads, scrapers, cores and flakes have been found to the east of Bullock Down around the 500 foot contour. The density of flints in this area would suggest intensive occupation lasting perhaps into the Early Bronze Age (see section II above). A general scatter of Neolithic flintwork including polished axes of flint and stone, has been found over much of the eastern side of the Down. The axes include 2 made of a pale green Greywacke of a type known only in the older Palaeozoic rocks of Wales, the Lake District and South Scotland.

The Beaker period is well represented by the settlement excavated at Belle Tout in 1968/9 (Bradley, 1970). This consisted of a valley bottom enclosure (Toms, 1912) around hut structures and pits. Beaker pottery has also been found further east at TV 581 954. Several Beaker arrowheads are known from the east of Bullock Down.

The settlement site at TV 591967 may have been occupied well into the early Bronze Age. In addition, many of the small round barrows from the area (e.g. at TV 592963 and 586975) are probably Early Bronze Age in date. Although many appear to have been dug into in the past, few accounts have survived of these early explorations.

A small Early Bronze Age pot was found in a barrow at Belle Tout. This is probably from the now ploughed out barrow at TV 563 958 (Giddy, 1814) although later descriptions suggest the pot came from the barrow now lost over the cliff at TV 556 975. The barrows to the west of the Beachy Head Hotel (TV 586 956) may well be those opened by Sir John Evans. A collared urn was found early in 1976 by Mr Williams on Long Down. It is hoped to examine the context of this find in 1977.

As yet no evidence for the Middle Bronze Age has been found, but the Late Bronze Age is represented by the Beachy Head hoard found after a cliff fall in 1806 'immediately under Beachy Head'. The hoard included 4 gold torcs, a spear head, 3 palstaves, 2 socketed axes and 3 'lumps of raw copper' (Holt, 1812).

In the pre-Roman Iron Age the whole area north of Beachy Head was a large farming complex. A settlement site at TV 591 964 appears to have been linked by a double lynchet trackway to the large stock enclosure at Belle Tout (TV 560 957). Excavations at Belle Tout (Bradley 1971a and Drewett 1975d) indicated the very weak nature of the enclosure at Belle Tout and its pre-Roman Iron Age date. The field systems to the north and south of the double lynchet track-way were probably laid out in the pre-Roman Iron Age, although the shape of many of the fields as they survive suggests a Romano-British layout.

In the Romano-British period the farming complex continued, although the settlements moved to the centre of the Down. Two sites are known from high densities of pottery and building material (TV 572 960 and TV 578 963). Both are on, or adjacent to, the double lynchet trackway. The objects found at the eastern site, including 3 coin hoards (Dolley and O'Donovan, 1962; Carson, 1968) a bronze lion's head, fibulae and finger rings, suggests a rather specialised type of site like a temple. At least one other coin hoard was found, probably to the south-west of this site (Budgen, 1916; Calvert, 1881; Haverfield, 1901). The close proximity of these two apparently contemporary sites would add support to the idea that one may not be a settlement site. The long, rectangular fields covering much of Bullock Down are likely to be Romano-British in date, although this remains to be confirmed by excavation.

There is as yet no evidence for occupation during the Migration or Early Medieval periods on Bullock Down. The area possibly reverted to open grassland towards the end of the Romano-British period. However, Migration period settlements are now well known from the Chalk Downs as at Bishopstone and Chalton.

Large blocks of Bullock Down appear to have been ploughed up again, perhaps in the 13th century AD. Ridge and furrow fields survive at TV 583 963, while strip lynchets survive at TV 584 961. Associated with these fields a small farmstead was established in Kiln Combe at TV 573 964 (Bell, 1974). This settlement is probably similar to that excavated a mile north at Bramble Bottom (Musson, 1955). These farmsteads were probably associated with the valley settlements established, perhaps in the Early Medieval Period, at East Dean, Eastbourne or Berling Manor.

Towards the end of the Medieval period much of Bullock Down reverted to grassland. Most of the area was probably used as open sheep runs, although by the early

19th century a wall was built around one field (TV 588 968) and a small shepherd's cottage built at TV 573 960. The Tythe Maps of 1842 show a long strip of arable in Kiln Combe. Bullock Down is now owned by Eastbourne Corporation and farmed by Mr E. Williams as a mixed farm with arable and livestock.

IV. The Excavation of a Double Lynchet Trackway and Marling Pit on Bullock Down, East Sussex

by P. L. DREWETT

The preliminary field survey of Bullock Down showed clearly that the major blocks of pre-Roman Iron Age/Romano-British fields were laid out from a double lynchet trackway, traceable running some 2 km. west-east across the Down. In an attempt to begin dating the field systems, a section 46.5 m. \times 3 m. was cut across the trackway to



Plate IV Bullock Down 1976. Section of upper lynchet of double lynchet trackway during excavation. (Photo. R. M. Jupe)

the east of site 16 (Fig. 8). The upper lynchet was badly eroded by agricultural operations (Plate IV) while the lower one was preserved intact as a current fence line. The three-dimensional recording of artifacts in the lynchets indicated that they were developing in the pre-Roman Iron Age and the Romano-British periods. A single posthole found at the foot of the upper lynchet may perhaps indicate a fence line. Several depressions in the trackway were filled with 1st–3rd century rubbish, perhaps spilt out from the settlement to the west. The site of the 1973 coin hoard, found by Mr Williams and excavated by the British Museum, was relocated on the trackway. This hoard consisted of 5,546 bronze coins (AD 253–273) found in a bronze bucket.

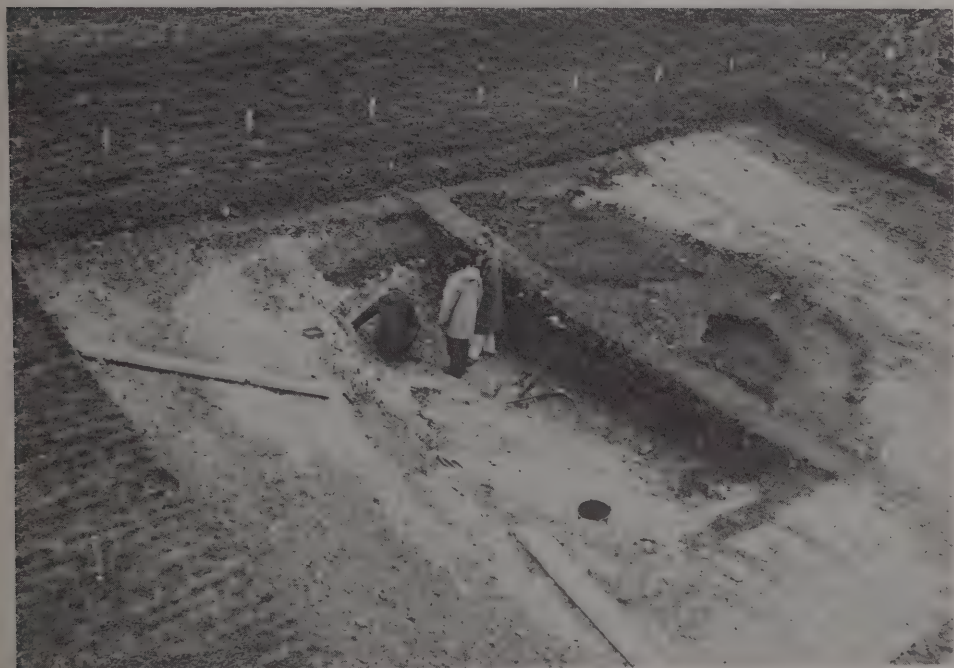


Plate V Bullock Down 1976. Romano-British marling pit during excavation. (Photo. R. M. Jupe)

To the east of the lynchet section, a small marling pit was totally excavated (Plate V) on the upper edge of the trackway (Fig. 9). The ridge above the trackway is capped with clay-with-flints and surrounding the capping are shallow pits, which may best be interpreted as being dug for chalk used to marl clay fields. The pit, some 6.5 m. in diameter, was only dug about 1.2 m. into the chalk. The lower silts contained 1st–2nd century occupation debris including pottery and animal bones and so a mid Romano-British date for the pit appears likely.

BULLOCK DOWN 1976

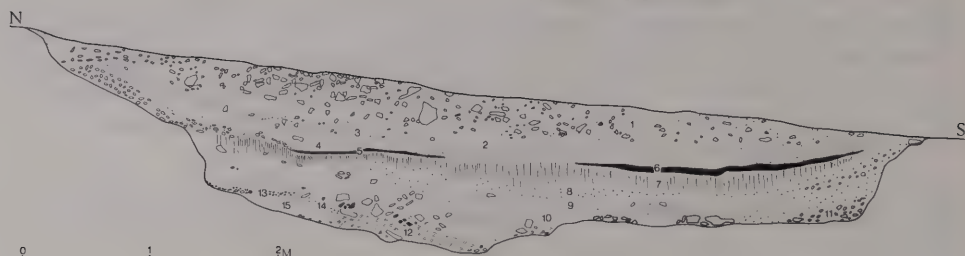


Fig. 9 Bullock Down 1976. Section of Romano-British marling pit.

V. The Preliminary Excavation of a Medieval Farmstead at Kiln Combe, Bullock Down, East Sussex

by P. L. DREWETT and L. STEVENS

The medieval farmstead at Kiln Combe consists of a series of house platforms dug into the south facing slope of a dry valley (Site 43 on Fig. 8). The Tythe Maps indicate that the site was ploughed around in the early 19th century so that it survived intact until the post-war ploughing. The northern half of the site has been ploughed for several years, while the remainder of the site will be brought into cultivation in the near future. The settlement may well have originally been surrounded by strip fields as a possible lynchet survives to the south of the site. Others could have been destroyed by post-medieval agriculture. Associated with the nucleated settlement are two apparently contemporary, but detached, buildings.

A limited excavation (Fig. 10) was undertaken in 1976 both to determine the present state of plough damage to the site and to attempt to date it. In the light of this excavation it is hoped to totally excavate the site in 1977. Four flint footed buildings were located in 1976 (Fig. 11) but only 1 (Fig. 11, Building I) was totally excavated (Plate VI). This consisted of a small, rectangular building terraced into the hill slope. The footings of the north and east walls survived while the position of the other 2 walls was indicated by the extent of the floor scoop. The small size of this building, together with a dump of limpet shells and some immature pig bones behind it, would suggest that this structure could have been a pigsty. A ditch located behind Building I may be interpreted as a drainage ditch to divert ground water away from the sty. Immediately to the north of Building I the end of a similar building was found (Fig. 11, Building II). The remains of 2 further buildings (Fig. 10) were found to the west of the Buildings I and II, but these will be investigated further in 1977. To the west of these buildings a complex of post-holes indicate both fence lines and enclosures together with possibly earlier buildings.

The pottery from the 1976 excavations would suggest that the structures excavated were essentially 15th century in date, perhaps lasting into the early years of the 16th

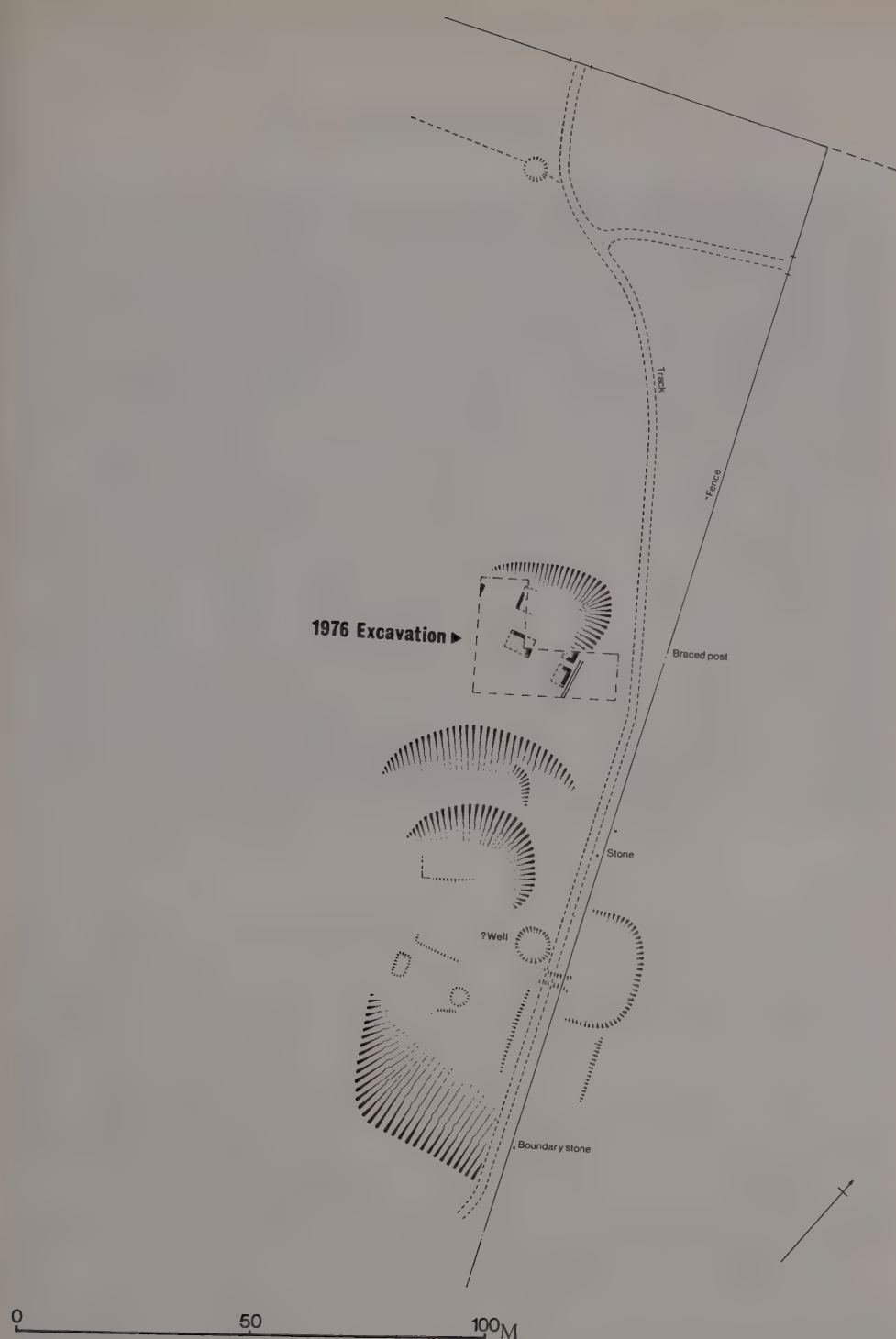


Fig. 10 Bullock Down 1976. Plan of medieval settlement in Kiln Combe. (Survey by F. G. Aldsworth)

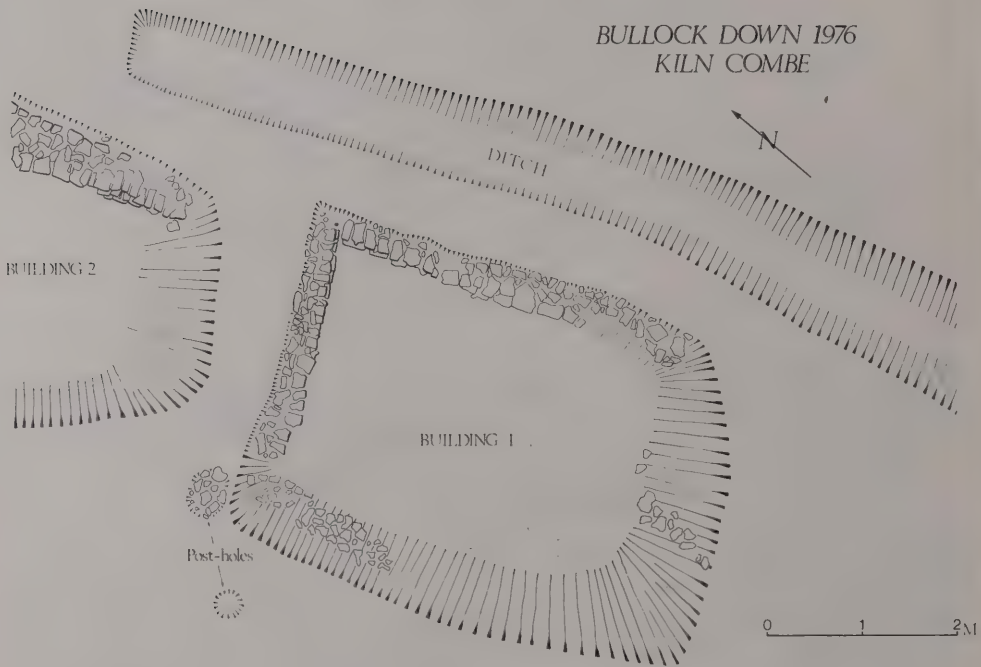


Fig. 11 Bullock Down 1976. Plan of Medieval Building I.

century. 13th–14th century pottery found in both the excavation and earlier field survey would, however, suggest an earlier origin for the site.

Some 900 m. to the west of the Kiln Combe site a series of small rectangular enclosures became visible as parch marks during the very dry summer of 1976 (Fig. 12A). As this area was about to be ploughed for the first time for several years, the opportunity was taken to make a limited trial excavation in an attempt to date the enclosures and associated parched circles. The 4 day excavation was undertaken under the supervision of Mr Lawrence Stevens who has kindly contributed the following note.

Feature 1 was sectioned at 3 points, and all showed signs of a recut ditch becoming progressively well defined. Section N–S (Fig. 12B) shows a well defined profile of the recut ditch. The 0.75 m. deep primary ditch was steep-sided and round-bottomed with a primary fill of yellow/brown silt with chalk fragments (Fig. 12C, layer 7). The inner side was covered with weathered and compacted chalk (layer 9). Above the primary silt were five lenses of yellow/brown silt with small chalk fragments (layer 6) in fine, light brown soil with small chalk fragments and flints (layer 4).

The layers of the primary ditch were truncated by the recut flat bottomed ditch with less steep sides, 0.6 m. deep and 1.89 m. wide. The primary fill was of light brown soil with large chalk fragments (layer 5) and the outer side of the ditch was covered by weathered and compacted chalk (layer 9). Above layer 5 were 2 lenses of yellow/brown



Plate VI Bullock Down 1976. Kiln Combe Medieval Settlement. Building 1 from the west. Scale 2 m. (Photo. P. L. Drewett)

soil with small chalk fragments (layer 6) in fine, light brown soil with small and large chalk fragments and flints (layer 4a). A dark brown soil, almost chalk free with a few small flints (layer 3a) covered the inner side of the ditch, above which there is a tumble of dark brown soil containing large flints and chalk pieces (layer 3). Above layer 3 there is a lens of light brown soil with large chalk fragments (layer 2) covered by a layer of dark brown soil with some chalk and flint (layer 1).

Finds from the 3 sections included 6 struck flakes from the fill of the primary ditch, while the recut ditch fill contained 130 flakes, 1 hammer stone, 1 scraper, 2 workshop waste fragments and part of a sandstone grain rubber.

There is little doubt that this is the recut ditch of a round barrow, probably of the Early Bronze Age. Unfortunately, nothing remains of the mound and it may be assumed that it was either deliberately removed, or more likely ploughed out in antiquity. Apart from a tree hole (T.H.1) no features were recorded from within the quadrant.

The layers in the primary ditch suggest a protracted period of time when the ditch was not maintained, whilst the recut ditch points to an extended use of the barrow.

Feature 2 (Fig. 12) was sectioned at 3 points and proved to be a round-bottomed ditch 0.2 m. deep at the north, deepening to 0.5 m. at the south, and widening from 0.53

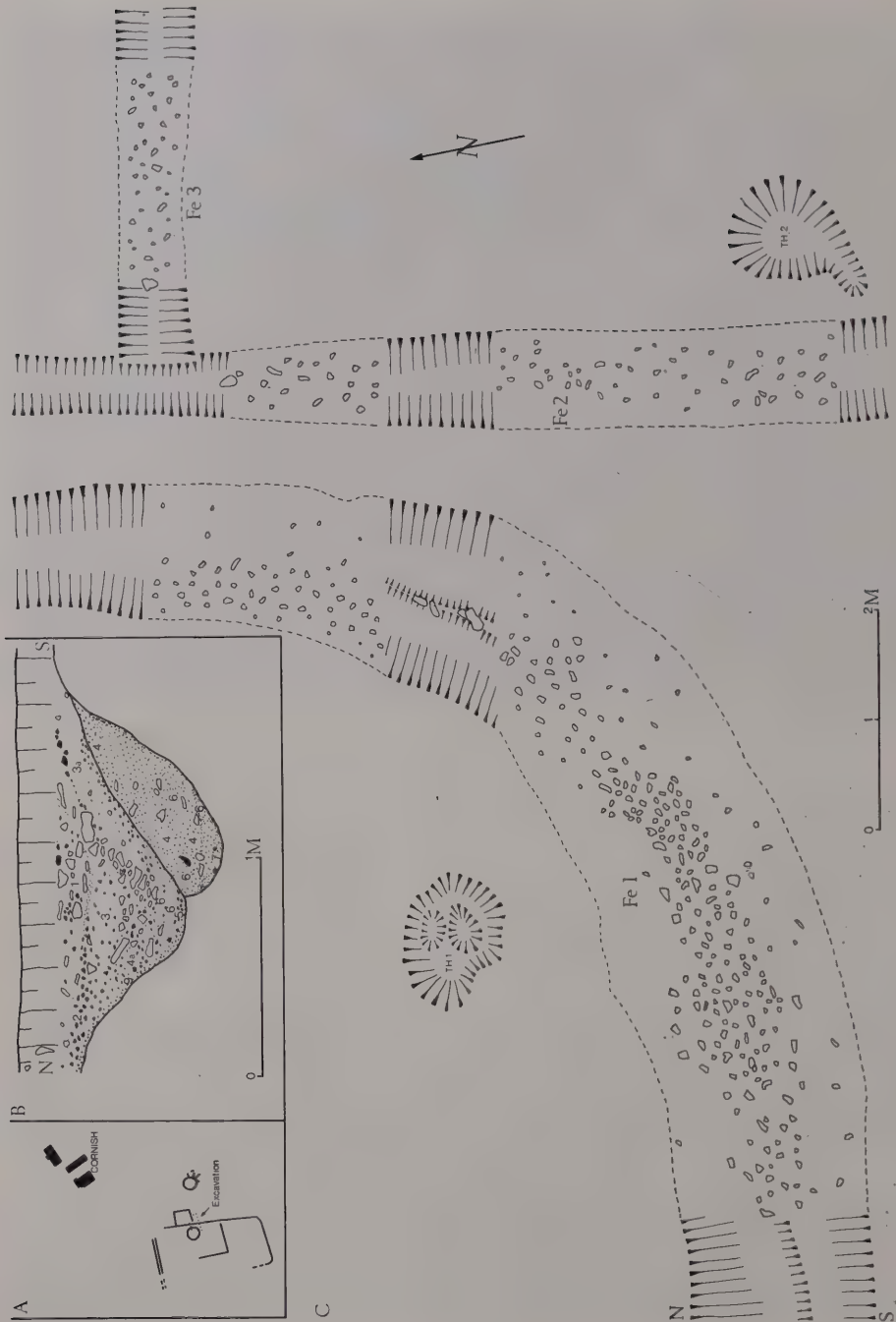


Fig. 12 Bullock Down 1976. Plan and section of round barrow and medieval field ditches at Cornish Farm.

m. to 0.91 m. Four layers were recorded producing Medieval pottery, a granite rubber stone; molluscs including limpets, winkles, oysters and mussels, fragments of burnt clay and some struck flakes.

Feature 3 (Fig. 12) was sectioned at 2 points revealing a shallow round-bottomed ditch 0.15 m. deep and 0.71 m. wide at the top. Its intersection with feature 2 was sectioned and showed that the floor of this ditch was 0.21 m. higher than the bottom of feature 2. Material from this ditch included 4 Medieval pottery sherds, fragments of burnt clay, a limpet and some calcined flint. There is a tree hole (T.H.2) adjacent to the south end of the exposed ditch and this may be one of a row along the length of the feature.

The evidence from features 2 and 3 suggest a Medieval date, probably 13th or 14th century. It is reasonable, on present evidence, to suggest that the ditches are boundary ditches of small enclosures, perhaps associated with a nearby farmstead.

The difference between the depth of the 2 features and their shape suggest that feature 3 is probably later than feature 2. It appears likely, therefore, that these enclosures are contemporary with the earlier occupation at Kiln Combe.

THE ORIGINS OF SUSSEX TOWNS

by D. J. FREKE

Sussex has 4 places mentioned in the 10th century Burghal Hideage; Hastings, Lewes, Burpham and Chichester (Fig. 13). Burpham was replaced by Arundel as the principal town on the River Arun and Chichester had already been a major Roman town, but Hastings and Lewes were stimulated into growth as towns by the strategic importance their defences gave them. One other Sussex town seems to have its origins in a major late Saxon settlement and that is Steyning, which was a port on the River Adur before its harbour silted. The castle built at Bramber in the 12th century shifted the focus of power in the area.

These 3 towns, Hastings, Lewes and Steyning (Chichester is the subject of continuing excavations by Mr Alec Down for the Chichester Excavations Committee) must be given priority in any study of the origins of the earliest towns in Sussex. However, in Hastings the site of the Saxon burgh is not known, and the town has been seriously affected by coastal erosion, which has caused its centre to shift at least twice since the Norman Conquest (Aldsworth and Freke, 1976). Much more basic information about the areas settled at various times is needed before a large scale excavation could be mounted. In Lewes the Unit has carried out 3 seasons of work in the north and east of the town (Freke, 1975; 1976 and see below, Section VII) which, coupled with previous observations, had defined the extent of the Saxo-Norman settlement in these areas. The problem in Lewes is the dating of the local pottery loosely called 'Saxo-Norman'. A

SUSSEX HISTORIC TOWNS

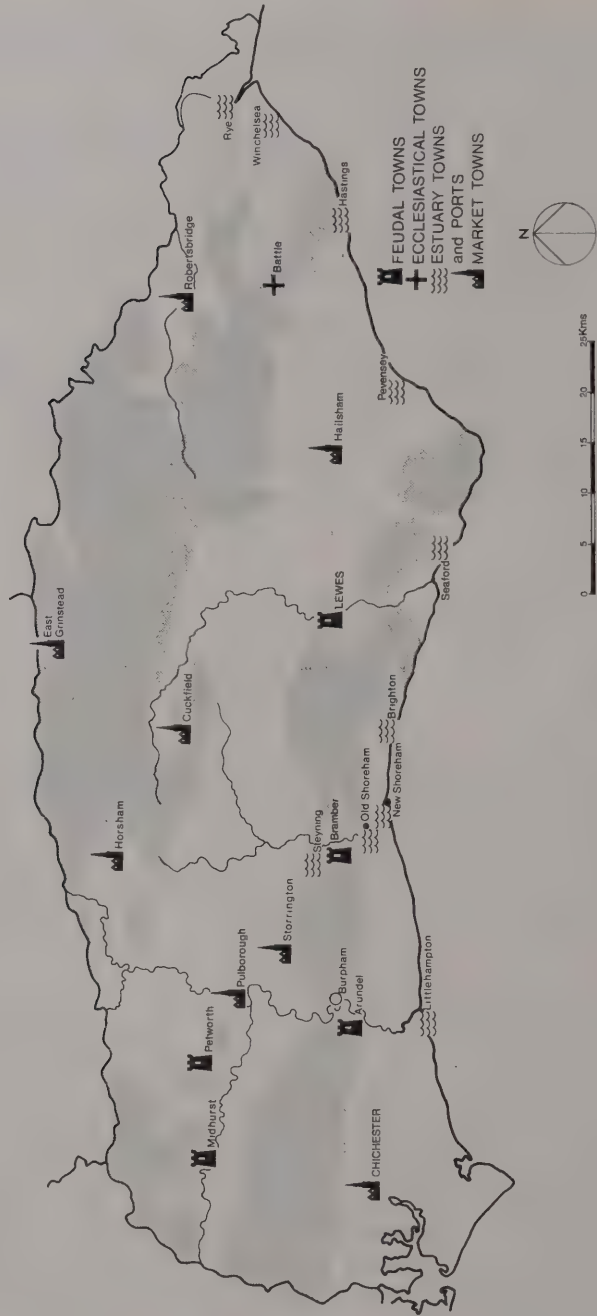


Fig. 13 Historic towns in Sussex.

more precise chronology is badly needed before even the existence of late Saxon occupation can be verified. In Lewes, too, the location of the Saxon burgh is not precisely known. Excavations in Steyning in the 1960s (unpublished) demonstrated the existence of 10th century settlement, but its extent and growth are unknown.

Many other towns grew up in the Norman period in response to feudal pressures (i.e. Arundel, Bramber, Midhurst) or to exploit the increased cross-channel trade (i.e. Seaford, Rye, Winchelsea). Many of these suffered from the vagaries of the coastline and storms and were, up to the coming of the railways, shrunken towns. This is particularly true of Seaford, which declined so dramatically in the post-medieval period that only 2 medieval buildings survive and the original extent and focus of the town is completely lost. Seaford offers the chance to examine a medieval port which has lain fallow for several hundred years. In such towns, particularly in the silted harbour areas, well preserved organic remains should survive, and imported pottery may be used to fix the chronologies of local wares.

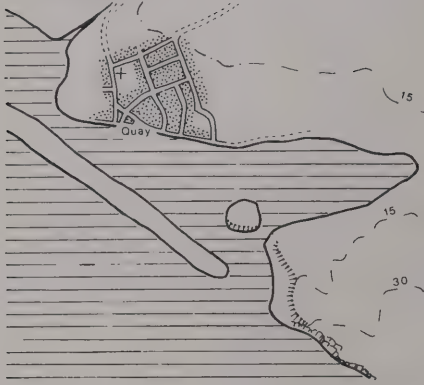
Towns which owe their existence to a deliberate act of planning are frequently extremely well documented, as at Winchelsea. This documentation allows house ownership and building phases to be correlated at times, as well as the relationship of an individual house to the rest of the town. Winchelsea is another 'shrunken town' and 2 seasons of excavation there by the Unit have produced confirmation of the documentary conclusions about the layout of the town as well as information about the early buildings and their modifications (King, 1975; and see below Section VIII).

Most towns in Sussex are archaeologically untouched, although many have been the subject of intense documentary research by local historians. It is hoped that some of this work can be checked in future seasons, especially as the excavations at Lewes and Seaford have shown the documentary evidence of early town growth and topography is not always reliable, if it is available at all.

The survey of Sussex towns carried out by the Unit in 1976 shows that urbanisation is not a static situation. Of the 23 medieval towns in that study only 15 can still be considered urban and several of these have changed their areas of focus. Another 10 towns, at least, have grown up since the medieval period. So the origins of towns are not restricted to one period, and the factors which affect the viability of a town may change radically, and may in effect 're-make' it at intervals. For instance, Hastings was first a Saxon settlement, then it was fortified by Alfred against the Danes, then refortified by William the Conqueror, it was one of the Cinque Ports Confederacy with an important naval strategic role, as well as a large fishing fleet. After attacks by the French and the destruction of its harbours by storms it relapsed into an insignificant village until the 19th century resort trade revived it. Each of these changes of emphasis altered the town physically, economically and politically and each phase should be traceable in the archaeological record. The justification for concentrating on the earliest phases is that they may be least amenable to documentary and architectural research. Except in planned towns the attainment of documented town status is achieved some time after the settlement has established itself and is, in effect, the recognition of such status.

SEAFORD

Medieval



Seventeenth Century



1975



● SITE

0 1 Kilometre

Fig. 14 Seaford. The development of the town. Solid shading on the lower map indicates recent or proposed development.

VI. Excavations in Seaford, 1976

by D. J. FREKE

Seaford in the medieval period was of some importance, becoming a Cinque Port as a 'limb' of Hastings as early as 1204 (Fig. 14). However, its decline in the 15th and 16th centuries has left only 2 standing medieval buildings; the parish church which incorporates 11th century work, and a 13th century merchant's cellar. These, and the Tudor Town Hall are all within 150 m. of one another to the west of the present town centre (Aldsworth and Freke, 1976).

A large site south-west of the church is scheduled for redevelopment, and the opportunity was taken to investigate this area between the 2 surviving medieval buildings. Permission to excavate was given by the Post Office Corporation (Fig. 15).

Trench A (Fig. 16 and Plate VII)

It soon became clear that because of road widening carried out in 1947 the trench was in the back gardens of the cottages visible in Edwardian photographs. After the removal of the present car park surface, a series of post-medieval features was recorded in the top 0.3 to 0.5 m. There was a hiatus between the 16th and 18th centuries with no evidence of occupation.

There was intense medieval occupation, however, with 32 pits, a well and the corner of a timber-framed building (Fig. 16). The pits and the well produced pottery of the 13th to 14th century, with a very few stray earlier medieval sherds and one Roman fragment. Five of the pits (Fig. 16, nos. 7, 8, 44, 66, 77) were cess-pits with near vertical sides, up to 4.5 m. deep and dug into the chalk. The fills included fish and bird bones, pottery, building materials and animal bones. The well (Fig. 16, no. 12) was 8 m. deep and even in the drought of the summer over 1 m. of water collected in an hour or so. The top metre of the shaft was crudely lined with large flint and chalk beach boulders with some sandstone blocks. The construction trench for this lining produced 13th century pottery. At the bottom of the well were several nearly complete jugs of the 13th and 14th centuries with sherds of many other pots as well as a wooden bucket and other wooden fragments.

The other pits varied in depth from a few centimetres to a metre or more, but none was cut into the chalk underlying the superficial periglacial deposits. Pit 15 (Fig. 16) was notable in that it was filled with beach pebbles and over 1,000 oyster shells. It contained a fine, glazed jug of the type made at Rye in the 13th and 14th centuries. No objects associated with the fishing industry were found, although the features date from Seaford's period as a port.

The robbed out corner of the sleeper walls of a timber-framed building were found at the north-east corner of the trench. A zone several metres wide, free of medieval pits, surrounded the walls, implying that the walls and pits were contemporaneous. Fragments of 16th century Raeren stoneware in the robber trench gave a date for the destruction of the building.

SEAFORD CHURCH STREET 1976

Location of sites



Fig. 15 Seaford 1976. Location of the excavations A and B.



Plate VII Seaford 1976. View of site from the north. Scale 2 m. (Photo. D. J. Freke)

Trench B (Fig. 17)

This trench was opened to check a suggestion that the church might have at one time extended further west (Lower, 1854), and to investigate further the extent of the medieval settlement.

The eastern half of the trench was occupied by a 19th century house, whose subfloor space had removed about 0.5 m. of earth, exposing periglacial deposits. On the western half of the trench, although disturbed by 18th and 19th century walls, there was about 0.3 m. of stratified deposits. The earliest layers were dated to the 13th and 14th centuries. Two small pits of the same date were found beneath the recent walls.

No evidence for an extended church was found.

Conclusions

The lack of features or even many finds earlier than the 13th century suggests that the earlier town was further to the south or east, nearer the quay. The church was out of reach of the floods on the adjacent rise. A similar relationship of quay, town and church is seen in medieval Brighton and Norman Arundel (Aldsworth and Freke, 1976). Perhaps the storms of the 13th century which forced the abandonment of the original site of Hastings and the removal inland of St Clement's Church, Hastings, also account for the move up the hill towards the church in Seaford.

SEAFORD CHURCH STREET 1976 A

Medieval features

Post-medieval features



0 1 2 3 4 5 METRES

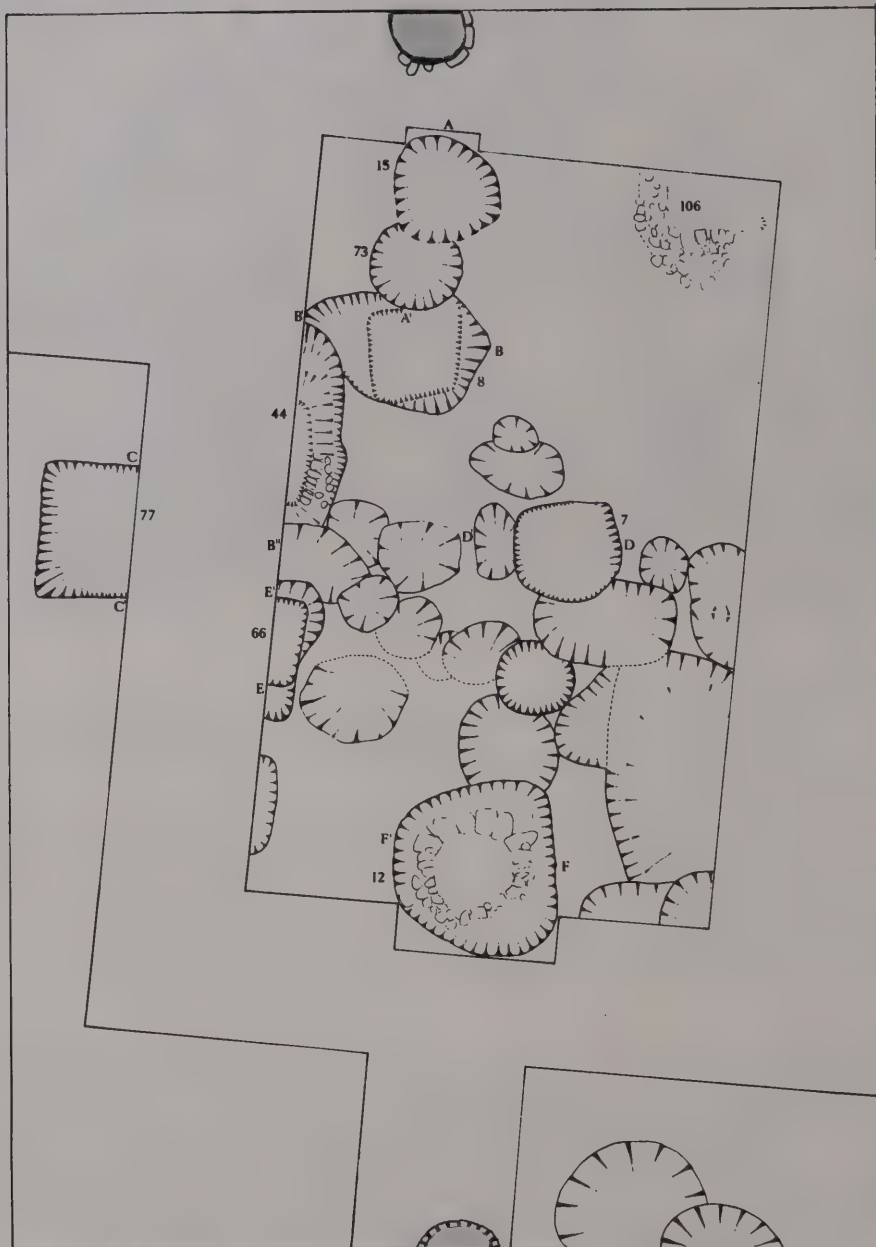


Fig. 16 Seaford 1976. Medieval features in Area A.

SEAFORD CHURCH STREET 1976 B

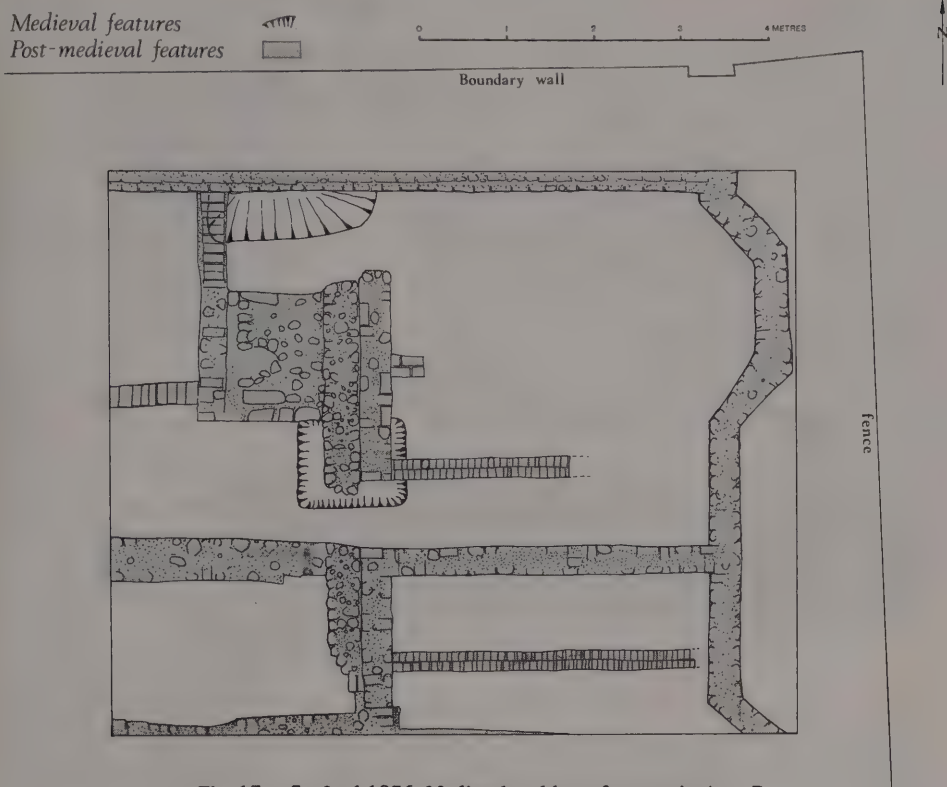


Fig. 17 Seaford 1976. Medieval and later features in Area B.

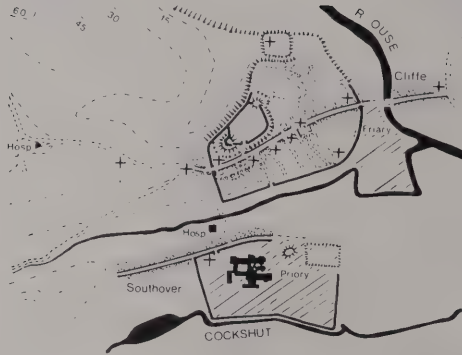
VII. Excavations in Friars Walk, Lewes, 1976

By D. J. FREKE

A small excavation was carried out in the area scheduled for redevelopment about 50 m. south of the site of the medieval east gate of Lewes. The intention was to check the possibility that the medieval town had spread eastwards and outwards from the Saxon 'burgh'. This was suggested by Mr J. Houghton on the evidence of property boundaries and the standing medieval buildings at the east end of the High Street (School Hill) Fig. 18). A trench 25 m. long and 3 m. wide, parallel to the High Street, was planned to check this hypothesis. In the event, an extremely constricted site with awkwardly positioned standing buildings, 1 derelict and in a dangerous condition, together with an array of modern disturbances necessitated the use of 3 separate trenches to achieve a 25 m. long section.

LEWES

Medieval



Seventeenth Century



1975



Fig. 18 Lewes. The development of the town. Solid shading on the lower map indicates recent or proposed development.

LEWES FRIARS WALK 1976

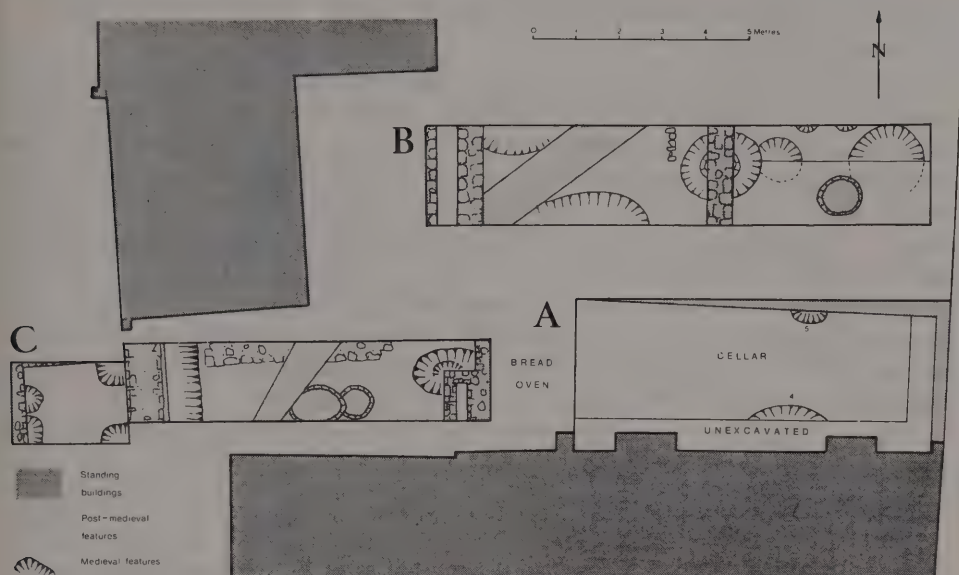


Fig. 19 Lewes 1976. Medieval and later features in Friars Walk.

Trench A (Fig. 19)

The first trench excavated proved to be a cellar, 2 m. deep, which had destroyed all stratification. However, under the floor were the bottoms of 2 pits dug into the natural sands and gravels (Fig. 19, nos. 4 and 5). Pit 4, rubbish pit, produces the earliest piece of Saxo-Norman pottery of the whole excavation. Pit 5 appeared to be a cess-pit and contained 12th century pottery.

At the west end of the trench was a recent bread oven which buttressed the buildings to the south and could not be removed. The north cellar wall exhibited 3 different building phases. The easternmost 3.60 m. was built of chalk block ('clunch') with occasional blocks of Caen stone, greensand and flint, and it was a course (30 cm.) deeper than the remainder of the wall. Built into this section, apparently randomly, were 5 chalk blocks marked with Roman numerals scored into the surface. These were studied by Mr L. Stevens and parallels were discovered built into other structures on or near the sites. They were clearly re-used blocks, 1 in the foundation course having fragments of a thin, white plaster still adhering to it and partially obscuring the marks. This could not have been applied *in situ*. Some of the other blocks were upside down. The next 2 m. of the same wall stepped up a course and was built of clunch with no anomalous blocks. The remainder of the wall was brick built, with a large blocked opening a metre from the floor (a coal chute for the oven?). Buildings are shown on this site on the earliest map of Lewes – Randall's of 1620. The first surveyed map of the area, Figg's of 1799 (East Sussex

Record Office) shows a structure occupying the area of the cellar (I am indebted to Mr L. S. Davey for drawing my attention to this map).

Trench B (Fig. 19)

This trench was excavated to the north of 'A' to examine the stratification of the eastern side of the site. Two walls identifiable on the 1799 Figg map, and a third associated with a standing building to the west, all crossed the trench north-south. The easternmost carefully bridged a small chalk lined well, which was too narrow and dangerous to excavate, but the construction trench produced 12th to 13th century pottery. The care with which it was bridged presumably indicates that it was in use at the time the wall was built in the 18th century.

Six medieval pits were found, producing pottery dating from the 12th to the 14th centuries. A possible wall running north-south just west of the medieval well had been all but destroyed by a 19th century cess-pit, which had only left one course and obscured its original relationship to other features.

A complete pottery sequence from the 12th century to the present day was recovered from this trench.

Trench C (Fig. 19)

This trench, a continuation of 'A', revealed a further 5 medieval pits, overlain at the western end of the trench by the drains and walls of an 18th century butchery. The eastern end was disturbed by a modern sewer pipe, a 19th century well and cess-pit and the flue of the bread oven. Further extension west was prevented by another cellar. However, enough remained of the medieval levels to give a similar picture to that shown in 'B', with 12th century pits the earliest feature.

Some of the chalk blocks used to build the well (backfilled in the 19th century), were found to have scratched marks on them similar to those found in 'A'.

Conclusions

The evidence from this site is in striking contrast to that obtained in North Street, Lewes, in 1975 (Freke, 1976) where exclusively Saxo-Norman features were found in 1 area, and nothing later than 13th century in the other. Apart from 1 early sherd from 1 pit, the evidence suggests that the 12th century saw the earliest occupation of the area, which was then continuously occupied to the present day. Further work on the post-medieval features will help to elucidate the recent history of this part of the town.

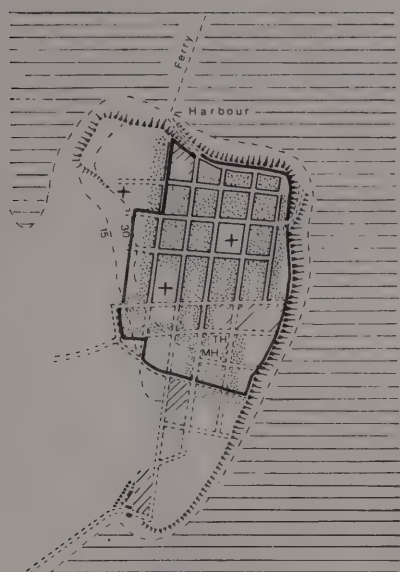
VIII. Excavations in Winchelsea, 1976

by D. J. FREKE, D. MARTIN and D. RUDLING

The remains of Blackfriars Barn are situated on the western side of Rectory Lane in what was formerly quarter 15 of the medieval town (Fig. 20). It was acquired by the National Trust in 1970 and excavated by S.A.F.U. in advance of restoration in 1976.

WINCHELSEA

Medieval



Seventeenth Century



1975



● SITE

0 1 Kilometre

Fig. 20 Winchelsea. The development of the town. Solid shading on the lower map indicates recent or proposed development.

New Winchelsea was established in 1283 by Edward I as a new town to replace Old Winchelsea which finally succumbed to the sea in 1287. Blackfriars Barn was originally probably a merchant's house and is dated on architectural grounds to about 1330 (Nairn and Pevsner, 1965). Like many other medieval buildings in Winchelsea it has fine, vaulted cellars which are being cleared, under archaeological supervision, by the National Trust. At ground level there are fragments of 3 walls still standing (Fig. 21), 1 almost to its original height, but they have been altered to convert the building into a barn at some time in the 19th century.

The excavation consisted of clearing and excavating the interior down to the top of the cellar vaults, investigating the area to the west of the building and either side, establishing a floor level in the western vault, and clarifying the original entrance to the vault.

The interior

Several recent low walls traverse the area between the 2 waggon entrances and they presumably supported a wooden floor. Under these and a layer of recent rubbish lay the clay capping on top of the stone vault. No trace of the original floor was discernible, although the brick surround of the fireplace and the 2 western door sills indicated its level. A large scoop to the north of the fireplace filled with stone and 16th century pottery gave a date for the destruction of the building. Two medieval structures were discovered: the foundations of a partition wall, which divided the building into a large hall and a smaller room at the rear, and a small fragment of wall whose function remains enigmatic. The foundations of the original east wall were found just inside the modern boundary wall. There is a substantial thickening in the foundations of the north wall near the north-east corner, but this too cannot be accounted for.

The surroundings

Excavations outside the western end of the building revealed 19th century cobbles. Trenches cut through them showed that the medieval ground level was near that of the present day, stone surrounds having been built around the 2 windows as retaining walls. The foundations of a wall continuing the line of south wall westwards were discovered, although there was apparently no scar nor any repairs at the south-western corner. This may have supported a lean-to or a passageway to the kitchen, the door in this corner opening out, the 'wrong' way, whereas the door in the north-west corner was larger and opened inwards. Fragments of iron hinges remain in both door jambs.

To the south a very fragmentary dry stone wall at the eastern end of the building indicated that there had been a timber-framed building adjoining the merchant's house on the south, while two off-sets and a recess in the north face of the north wall show that this too was a party wall. There is also a dry stone wall for a timber-framed structure adjoining the house at the north-west corner.

RESCUE ARCHAEOLOGY IN SUSSEX, 1976

WINCHELSEA BLACKFRIARS BARN 1976

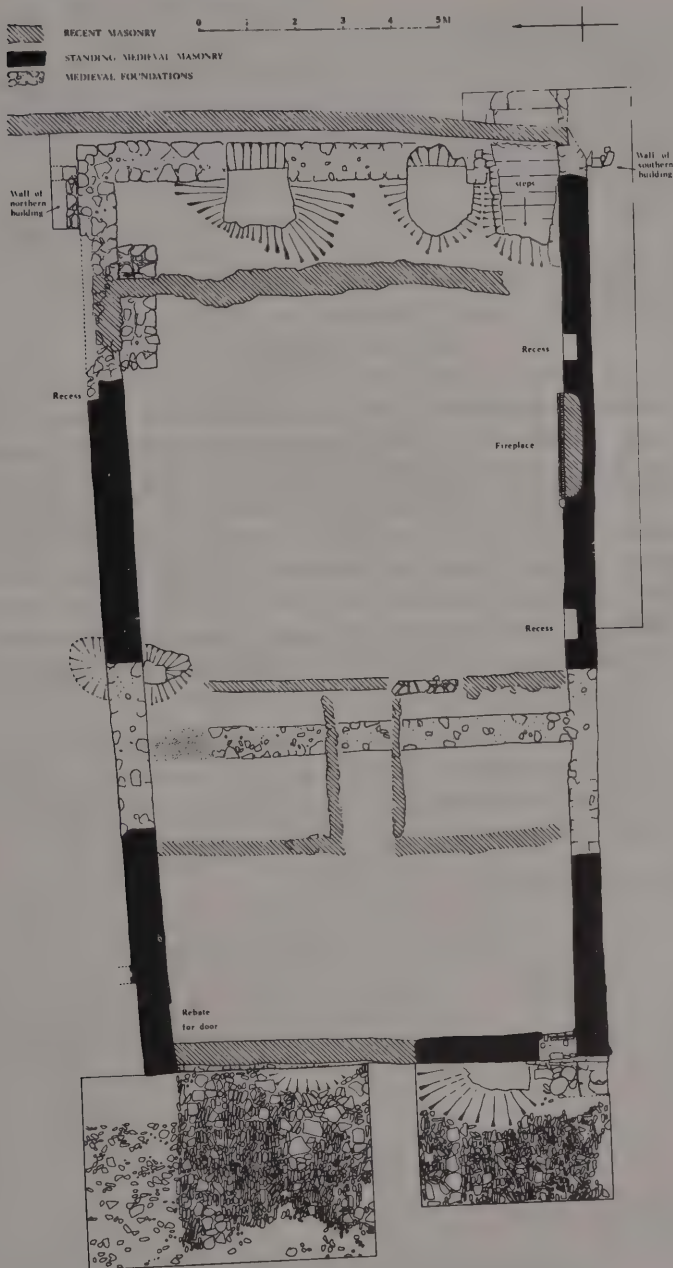


Fig. 21 Winchelsea 1976. Plan of excavations.

The cellars

There was never any access between the cellars and the ground level rooms, the cellars being entered by stairs from the street. They comprise a central five-bay barrel-vaulted chamber set on a north-south axis with a two-bay quadripartite vaulted chamber on each side. There are 2 windows in the eastern and western chambers, but the central barrel-vault must always have needed artificial illumination. There were several metres of accumulated rubbish, mostly modern, especially in the eastern chamber and excavation of this is continuing.

PRE-ROMAN IRON AGE SETTLEMENT IN RELATION TO ECONOMY AND ENVIRONMENT

by O. R. BEDWIN

Most of the known pre-Roman Iron Age sites in Sussex are on the chalk of the South Downs. Many of these sites have been excavated and inevitably knowledge of the period is confined mainly to this area. The Coastal Plain particularly, with its gravels and brick earths, is still largely *terra incognita* (Fig. 22). There is no *a priori* reason to suppose that this area was especially inimical to settlement in the Iron Age (Roman occupation of the area is, after all, known to have been extensive). The soils are fairly fertile, though admittedly difficult to work in extremely wet or dry weather; communications over the flat plain are unlikely to have presented insuperable problems, and there is easy access from the sea, with several sheltered harbours. Two factors are responsible for our present lack of information about Iron Age sites on the Coastal Plain:

- (i) The difficulty of finding such sites; no earthworks survive, and aerial photography does not reveal them, particularly on brick earth.
- (ii) The difficulty of excavation; typical prehistoric features show up faintly even in favourable conditions, or, more often, not at all.

IRON AGE SITES



Fig. 22 Pre-Roman Iron Age Sussex.

The late Iron Age settlement at North Bersted is the first to be identified on the Coastal Plain and thus selected itself for further investigation in 1976. It is a sobering thought that the site, on brick earth, was found by accident, during road construction.

The situation in the Weald is rather different. Several large hill-forts are known, but there is a puzzling absence of any other type of Iron Age site. Thus one of the aims of the project will be to locate and excavate sites in the Weald and on the Coastal Plain, with a view to extending our knowledge of the settlement of these areas in the Iron Age.

The project has slightly different aims with regard to sites on chalk. First, it is still necessary to continue excavation of threatened sites whose date and function are still unknown; the hill-fort on Beacon Hill, Harting, comes into this category. Secondly, the pattern of Iron Age settlement will be considered; this will involve, among other things, a consideration of the nature and size of site territories. The class of linear earthworks known as spur-dykes or cross-dykes, according to position, may plausibly represent the boundaries of territories in some cases. The opportunity to excavate a stretch of spur-dyke at Upper Beeding was, therefore, extremely welcome.

IX. The Excavation of a Late Iron Age Settlement at North Bersted, Bognor Regis, West Sussex, 1976

by O. R. BEDWIN

Following trial excavation on this site in 1975 (Pitts, 1976), further excavation on a larger scale was carried out in July and August, 1976.

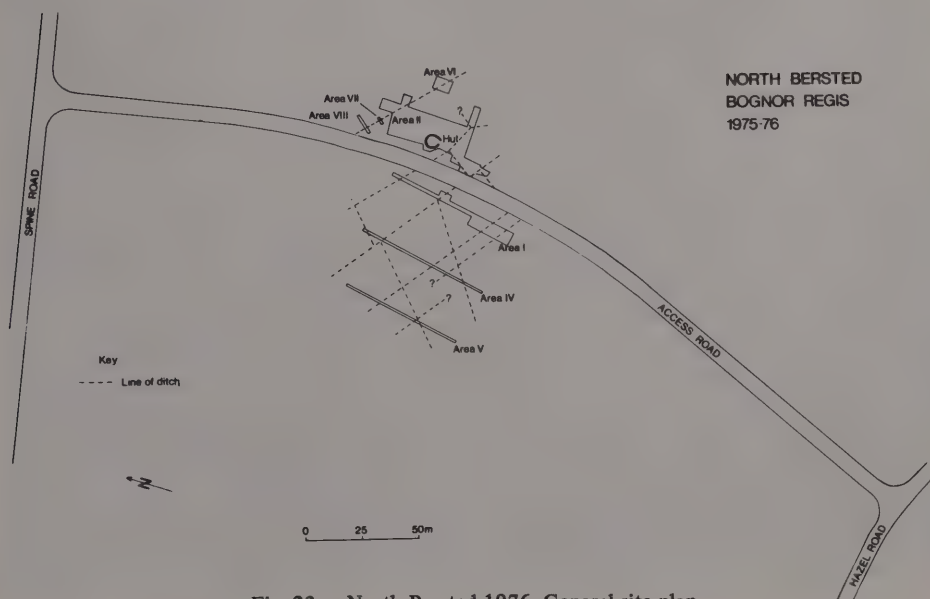


Fig. 23 North Bersted 1976. General site plan.

NORTH BERTSTED
BOGNOR REGIS
1975-76

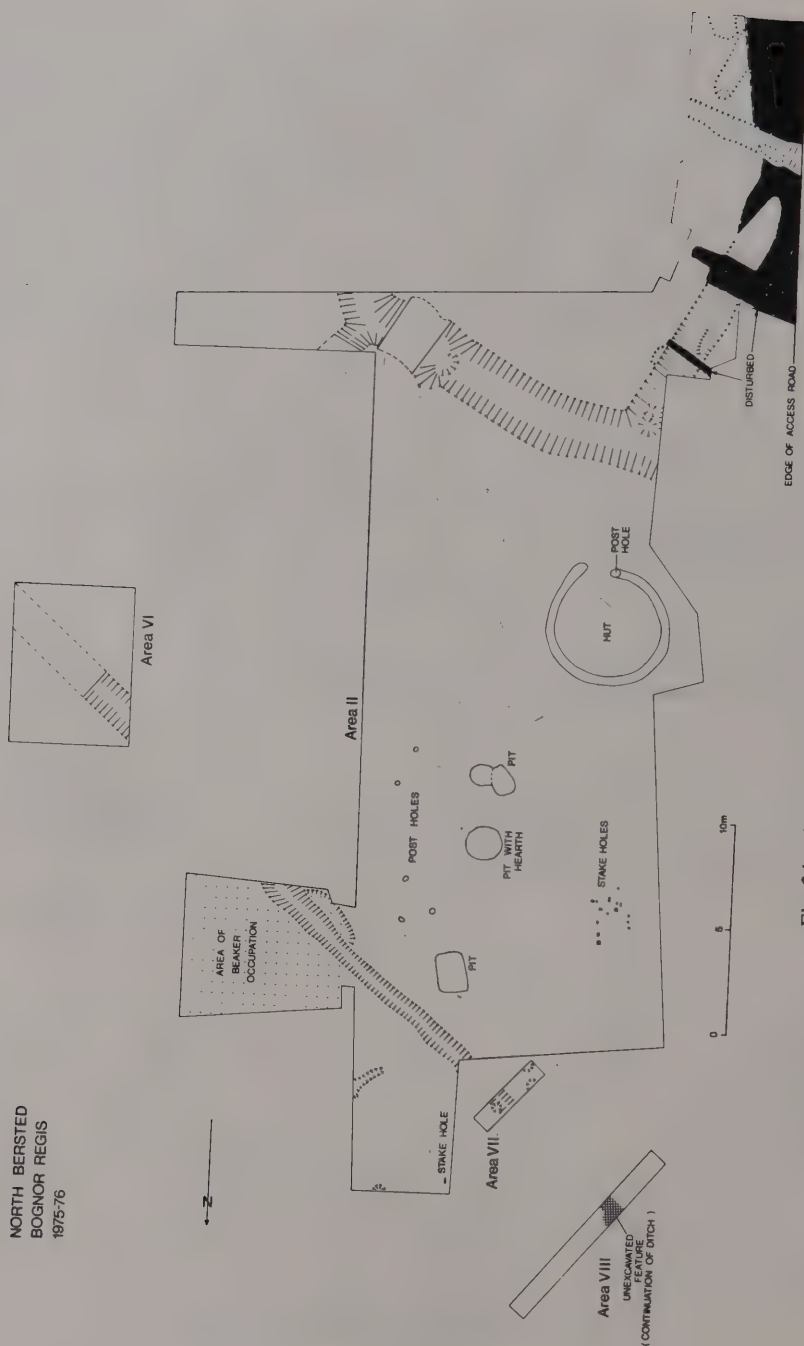


Fig. 24 North Bersted 1976. Plan of Areas II and VI.

The site resolved itself into a network of ditches, the function of which was almost certainly drainage (Figs. 23 and 24); the whole area is only a few metres above OD. The ditches to the west of the access road delineated a rather irregular network of fields; the ditch silts were extremely homogeneous and contained very few finds, by contrast with those in the vicinity of the hut in Area II, where large quantities of pottery and other domestic debris were found.

The remains of the hut consisted of a shallow U-shaped ditch with an homogeneous fill containing sherds of saucepan pottery. The ditch formed an irregular circle, with a single break, presumably indicating the entrance, and a single, terminal posthole (Fig. 24; Plate VIII).

Saucepan pottery was found in almost every feature excavated in 1976, with a noticeable concentration in the area around the hut. There was also a considerable number of sherds of typical Belgic forms, notably from the large ditch to the south of the hut. Little Roman pottery was present, and it would seem that the area around the hut was abandoned at the end of the Iron Age, though the field system may well have remained in use in the early Roman period; a few small sherds of Romano-British pottery were found in the ditches to the west of the access road.

One important conclusion to be drawn from the results of 2 seasons work at North Bersted is that Iron Age settlements on the Coastal Plain may not be of the



Plate VIII North Bersted 1976. View of the hut from south-west. Scale 2 m. (Photo. O. R. Bedwin)



Fig. 25 (a)

BEACON HILL, HARTING

RESCUE ARCHAEOLOGY IN SUSSEX, 1976

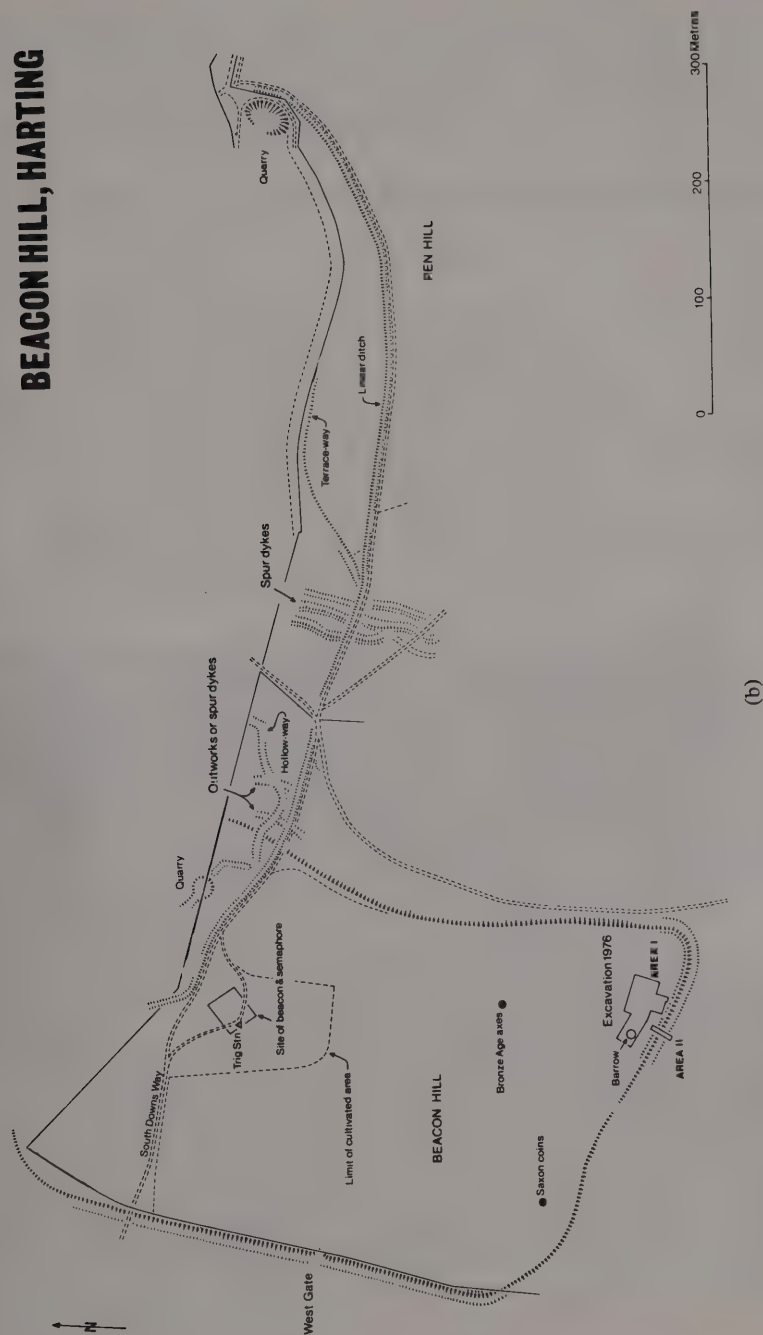


Fig. 25 Beacon Hill, Harting 1976. (a) Distribution map of Sussex hill-forts and (b) general plan of Beacon Hill, Harting. (Latter by F. G. Aldsworth)

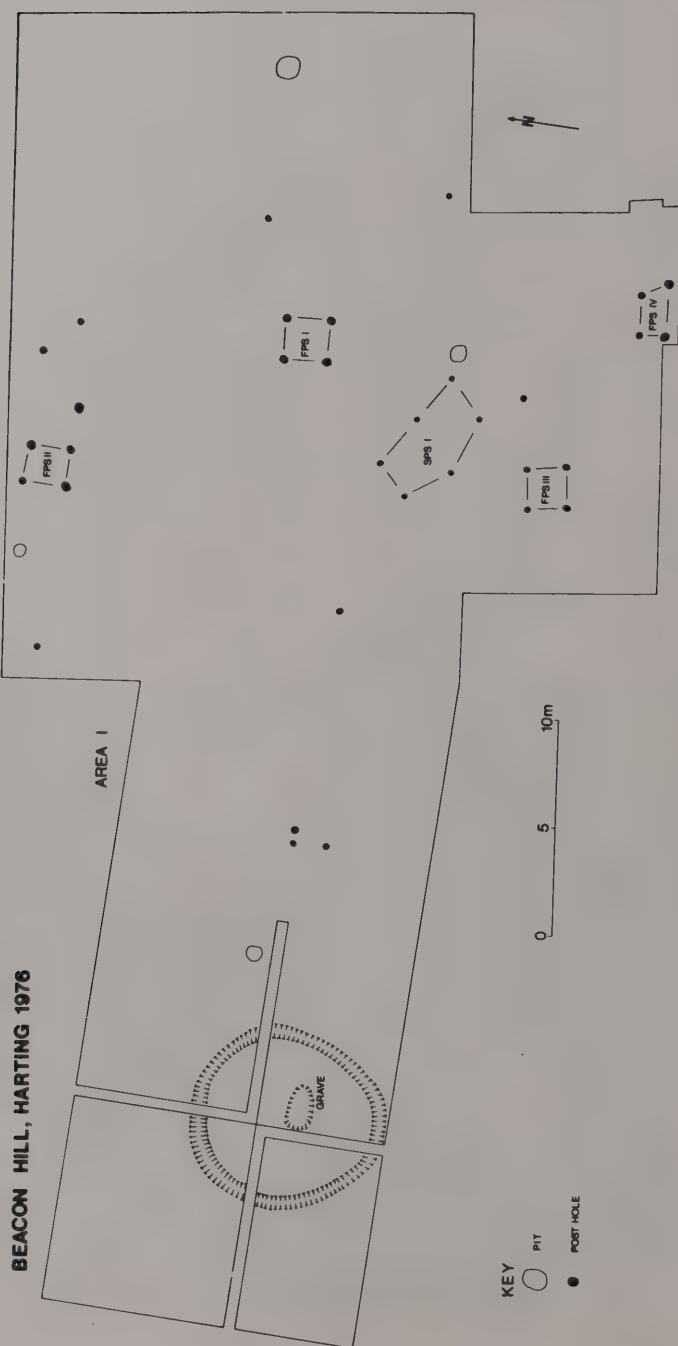


Fig. 26 Beacon Hill, Harting 1976. Plan of Area I.

'nucleated' type often found on the chalk Downs to the north, but are of a 'dispersed' form, in which the most conspicuous archaeological feature is a network of drainage ditches, forming field boundaries, with isolated huts at regular intervals. A similar pattern has emerged from the late Iron Age settlement at Dragonby, Lincolnshire (May, 1970).

X. Excavation in the Hill-Fort on Beacon Hill, Harting, West Sussex, 1976

by O. R. BEDWIN

The hill-fort on Beacon Hill, Harting, is a rectangular, univallate earthwork enclosing 25 acres. It has a single entrance to the west, and there is a complicated series of supernumerary earthworks to the east (Fig. 25), notably a linear earthwork running down along the ridge and over the summit of the adjacent hill, and a series of cross-dykes.

Most of the hill-fort interior is ploughed every year; field-walking produced little pottery, and most of this was in the south-east corner (M. Millett, pers. comm.). Accordingly, an area inside this corner, including a small round barrow, was excavated (Figs. 25b and 26). A section was also cut through the ditch and rampart (Plate IX); this revealed a steep-sided, flat-bottomed ditch, 1.2 m. deep, and a wide, low rampart,



Plate IX Beacon Hill, Harting 1976. Area II. Section through ditch and rampart. Scale 2 m. (Photo. O. R. Bedwin)

consisting simply of chalk rubble. Two postholes cut into the chalk below the front edge of the rampart suggested that a vertical wooden retaining structure had originally existed.

Within the area excavated inside the hill-fort were four-posthole structures FPS I-IV, a six-posthole structure, SPS I, and 3 pits (Fig. 26). All produced early Iron Age pottery of a very limited range of forms, as did the ditch outside the rampart. Pottery of no other date was found, except for one possible Romano-British sherd in the modern ploughsoil. Thus the date of the hill-fort is firmly established; its function is not so clear. Current views on hill-forts of this type, i.e. very large, rather feebly defended, and with little sign of settlement, suggest that they are primarily stock-raising enclosures. The lack of any signs of Celtic fields in the vicinity supports this. A geophysical survey of the site is planned, and it is hoped to locate large pits or working hollows containing material which will give some indication of the activities carried on inside the hill-fort.

The excavation of the barrow revealed a shallow, circular ditch, with a single, central grave cut into the chalk (Fig. 26). The grave had been robbed out, but some of the bones of the original inhumation (an adult male) had been thrown back; it is hoped to obtain a C-14 date from these as no grave goods were found. The small size of the barrow does suggest a Saxon date.

XI. The Excavation of a Spur-Dyke, Old Erringham Farm, Upper Beeding, West Sussex, 1976

by O. R. BEDWIN

The site was brought to the attention of S.A.F.U. by Mr F. G. Aldsworth, the County Field Archaeologist for West Sussex, during the routine checking of planning

SPUR-DYKES AND CROSS-DYKES



Fig. 27(a)

RESCUE ARCHAEOLOGY IN SUSSEX, 1976

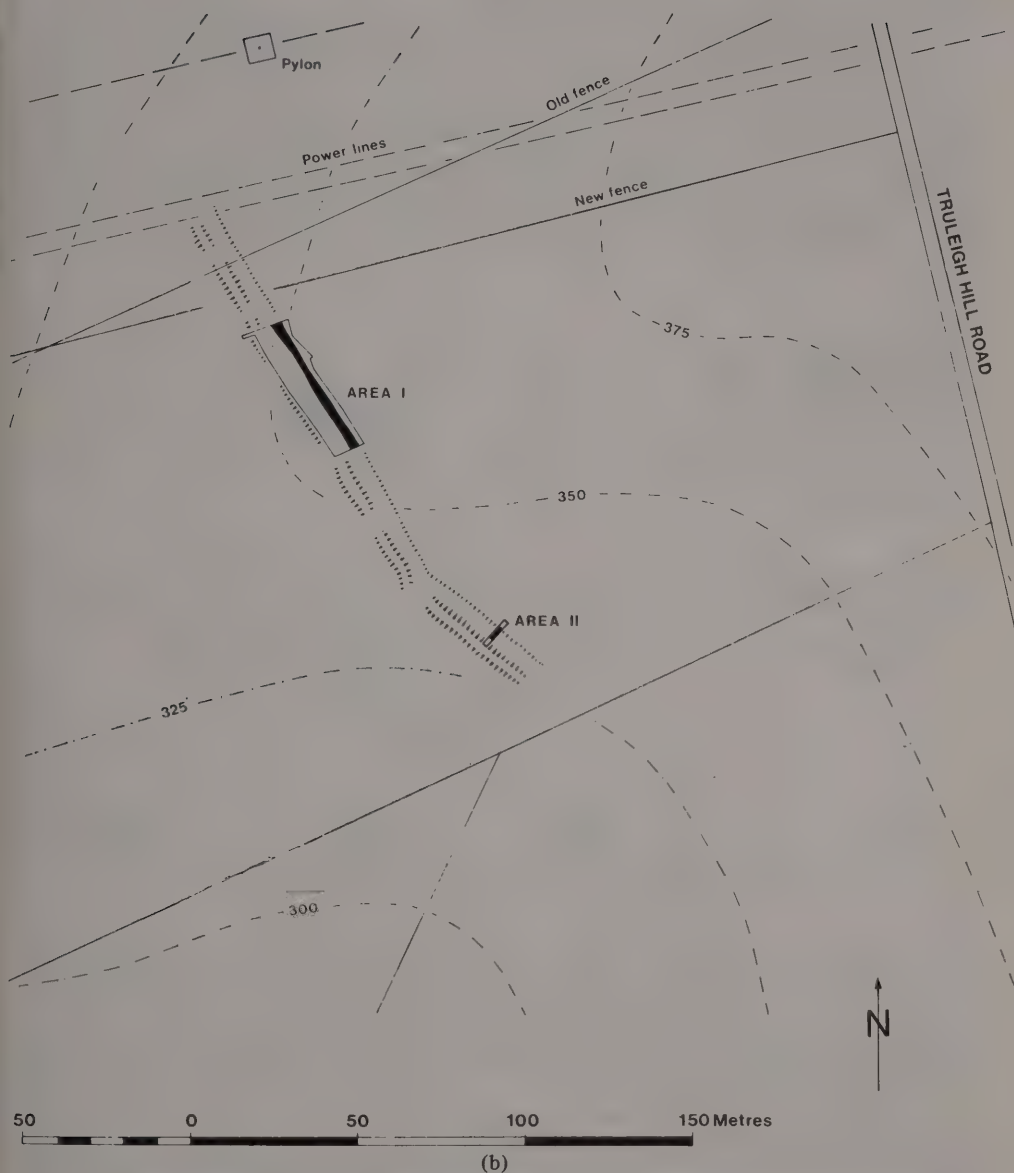


Fig. 27 Upper Beeding 1976. (a) Distribution map of Sussex spur-dykes and cross-dykes, and (b) general plan of site at Upper Beeding. (Latter by F. G. Aldsworth)

applications. The spur-dyke was clearly visible on aerial photographs as a linear crop-mark on land due to be taken over for chalk quarrying.

This earthwork, which took the form of a parallel ditch and bank, was 160 m. long with a dog-leg at its southern end (Fig. 27b); it ran across the top of a spur of chalk running west, down towards the River Adur. About 50 m. of the earthwork was examined (Fig. 27b, Area I); the ploughsoil was removed by machine. It became clear that the bank had not survived modern ploughing, although its original extent was marked by slightly raised areas of chalk which had been relatively protected from the plough by the bank, which was thus shown to have been discontinuous. This was confirmed by the

**SPUR-DYKE
OLD ERRINGHAM FARM
UPPER BEEDING 1976**

KEY

- 1 Modern ploughsoil
- 2 Lens of fine, black soil
- 4 Flinty, black soil
- 5 Light brown, gritty chalk
- 6 Small chalk rubble

DITCH SECTIONS

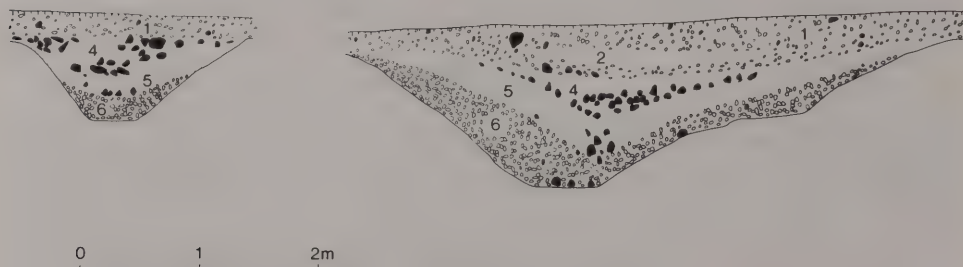


Fig. 28 Upper Beeding 1976. Left; south end of Area I. Right: north end of Area I.

aerial photographs. The ditch, however, was continuous, and 4 separate sections of it were examined in Area I, plus a fifth section across the dog-leg (Fig. 27b, Area II). The size of the ditch varied considerably from 0.6 m. deep to 1.30 m. deep (Fig. 28); little was found in the ditch silt except a few sherds of early Iron Age pottery, though none came from a primary context.

Known prehistoric occupation of the South Downs in the vicinity is largely Iron Age (Slonk Hill and Thundersbarrow are both less than 2 miles away). The spur-dyke could therefore possibly mark the territorial boundary of either of these sites. It is certainly difficult to imagine that the earthwork ever had any defensive or obstructive purpose; the gaps in the bank and the variability of the ditch profile make this most unlikely.

**ROMANO-BRITISH SITE
RANSCOMBE HILL
SOUTH MALLING 1976**

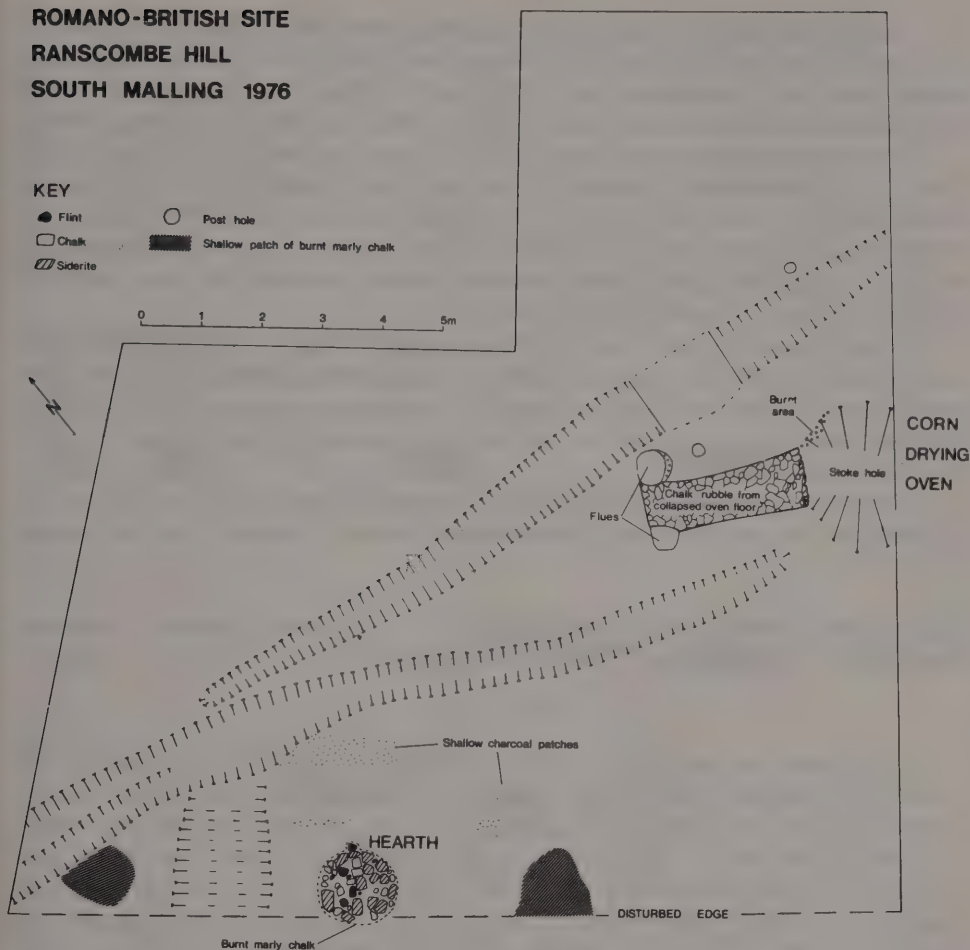


Fig. 29 Ranscombe Hill 1976. General site plan.

NON-PROJECT RESCUE EXCAVATIONS

XII. The Excavation of a Romano-British Site at Ranscombe Hill, South Malling, East Sussex, 1976

by O. R. BEDWIN

During construction of the eastern end of the Lewes by-pass, Mr John Dove noticed sherds of Roman pottery in disturbed topsoil. The contractors allowed 2 weeks for investigation of the area, and, as a result, part of a hitherto unrecorded Romano-British site, probably a farmstead, was found.

The site was situated on a south-facing spur of chalk below Mount Caburn, with a commanding view over the flood-plain of the River Ouse. As excavation proceeded, it became clear that a considerable part of the site had already been destroyed unnoticed during the late 1960s by the construction of the cutting in which the previous road ran.

Two shallow ditches were found (Fig. 29); these were probably boundary ditches, though not contemporary. Adjacent to one of these ditches was a keyhole-shaped corn-drying oven. Small chalk blocks had formed the floor of the oven, which had collapsed. The stoke-hole had been used as a rubbish pit after the oven had gone out of use, and was filled with animal bones, charcoal, pottery, and some tiles, which may have been derived from the superstructure of the oven.

Near the south edge of the excavated area, a circular structure was found, consisting of flat slabs of siderite (an iron ore) and flints. The flint was not fire-cracked, though the marly deposit immediately above and around the structure was orange-red and had clearly been heated, though not perhaps to a very high temperature. The precise function of this structure is uncertain.

Pottery recovered from the ditches and corn-drying oven dated to the 2nd and 3rd centuries AD, and the site seems to have been abandoned by the end of the 3rd century.

XIII. Excavations in the Parish Church of St Thomas à Beckett, Pagham, West Sussex

by D. J. FREKE

The Sussex Archaeological Field Unit was notified by Mr F. Aldsworth, the archaeological advisor on the Chichester Diocesan Committee, that the floor of the parish church at Pagham was to be taken up and central heating installed. The church at Pagham (Fig. 30) is considered to have Saxon (11th century) masonry visible in the chancel walls (Fisher, 1970), and a 7th century Saxon pot on display in the church was found in the churchyard (Collins, 1955; Cunliffe, 1974). Beckett's Barn, 50 m. south-east was excavated in 1974 and evidence of 8th century Saxon occupation recovered (Gregory, 1975). The central heating will involve the whole nave, but it is being installed in 2 stages, and at the time of writing only the southern half of the nave has been available for examination.

The 19th century pews in the nave are on a raised, suspended wooden floor. There is a gap underneath this floor, presumably dug out when it was installed. This means that no earlier floor levels remain under the pews. However, there was a layer of mortar, quite hard in places, especially at the eastern end of the trench, which may have been the remnants of a bed for floor tiles, as at Angmering (Bedwin, 1975), or stone slabs, one of which was *in situ* under the 19th century restoration of the south-west crossing pier.

Under this layer of mortar at the eastern end of the trench were the foundations of 2 early walls. The later one, whose 1 m. thickness was only discernible in a small access trench cut for the central heating ducts, underlay the existing 13th century nave arcade.

PAGHAM 1976 *St Thomas' Parish Church*

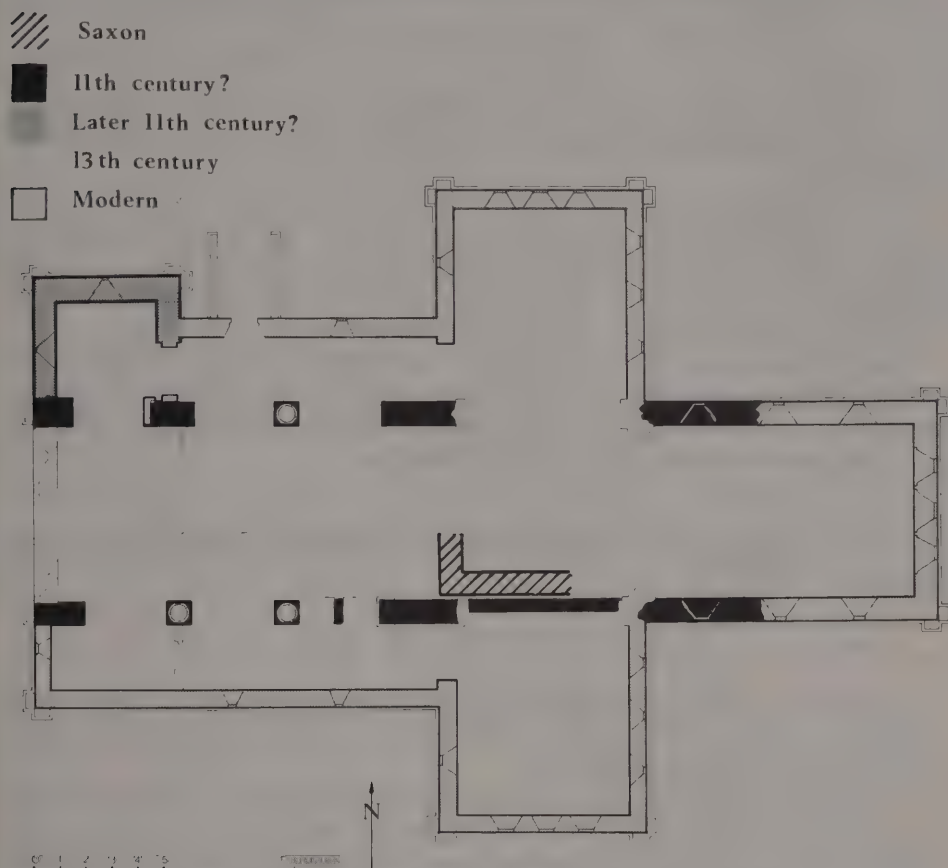


Fig. 30 Pagham 1976. Period plan of St Thomas à Beckett's Church with excavated remains of Saxon church.

It is also in line with the possibly 11th century work visible in the south chancel wall, and must be presumed to be of the same period. The earlier wall, inside the 11th century rebuild was about 90 cm. wide, built with large, rough blocks infilled with beach pebbles and very hard mortar. It was laid in a foundation trench on a layer of gravel and small stones. This wall turns north across the nave just west of the present crossing and this is presumably the west end of this phase of the church. Although no firm dating evidence was recovered, the earlier wall's relationship to the 11th century wall and its structure, particularly the hard mortar which forced the contractors to use a mechanical hammer to cut through it, strongly suggest that it is pre-Conquest. When the north side of the nave is available for examination, effort will concentrate on obtaining some dating evidence for this early structure.

XIV. An Excavation in the Old Clergy House, Alfriston, 1976

by D. J. FREKE

A limited excavation in the hall of the 'Wealden' Clergy House was carried out to check the existence of the medieval floor and hearth prior to consolidation by the National Trust.

The excavation showed that the floor has at some time been lowered below the medieval occupation level. The hearth area was identified by heat-reddened clay and crushed chalk, no more than 10 cm. thick. This was covered by about 8 cm. of post-18th century material, but the hearth itself had been removed before these later deposits were applied. The natural chalk lay 15–20 cm. below the present floor level.

A small scoop cut into the discoloured layers produced a few fragments of 18th century tin-glazed earthenware. There were no other datable finds from any of the layers, but there were many fragments of Horsham stone, suggesting perhaps that the house was at one time (pre-18th century) roofed with this material.

XV. The Excavation of a Blast Furnace at Maynard's Gate, Crowborough, East Sussex, 1975/76

by O. R. BEDWIN

Following notification that planning permission had been given for the building of warehouses on the site, total excavation of the blast furnace was carried out in November and December, 1975, and April, 1976.

Historical references to the site are few; it is mentioned in the 1574 list of Wealden ironworks as 'employed to none other use but to the makeing of ordinance and shott' (Lower, 1866), i.e. it was a gun-casting furnace. The site is recorded as having been abandoned by 1664 (Parsons, 1882), but the Tithe Map, c. 1840, still shows the field in which the site lay as 'Furnace Mead'.

The former bay (dam) was quite conspicuous, running across the bottom of the valley in which the site was situated. The stream had broken through the centre of the bay (Fig. 31); in the steam bed at this point, isolated pieces of worked sandstone were visible, and large amounts of blast furnace slag could be seen in its banks.

Excavations began on the south side of the stream (Fig. 31); the bay was sectioned by machine and 2 areas immediately behind the bay were investigated (Fig. 31. Areas I and II). Apart from a few pieces of sandstone rubble, Area II was barren, but removal of the overburden in Area I revealed the remains of the blast furnace (Fig. 32, Plate X). The furnace itself had been almost completely robbed out, leaving only the foundation courses, which, on the west side, were continuous with a sandstone working floor. No trace of the bellows was found, though the rectangular gap in the working floor (Fig. 32)

**MAYNARD'S GATE
CROWBOROUGH
1975-76**

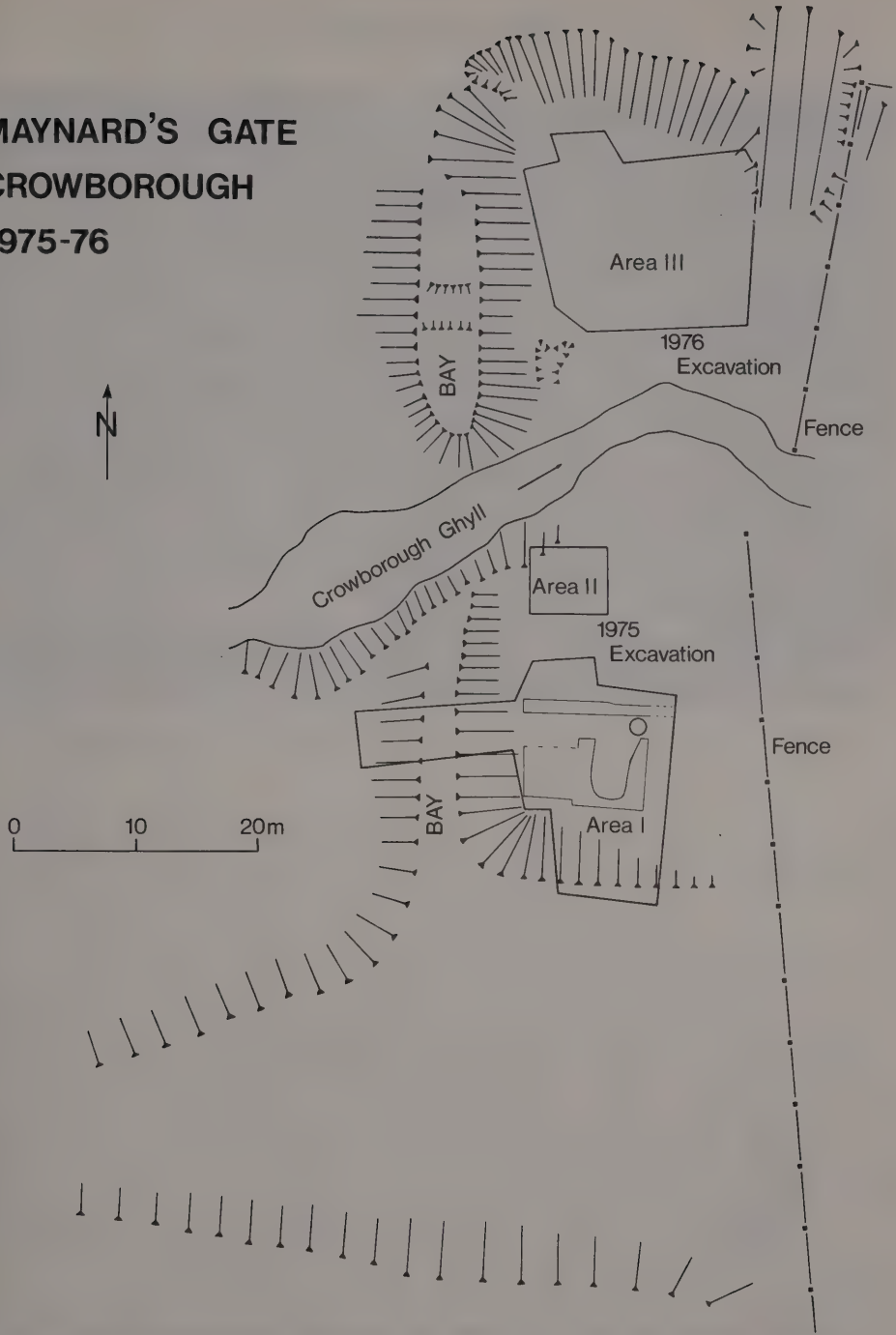


Fig. 31 Maynard's Gate, Crowborough 1976. General site plan. (From a survey by John Bell)



Fig. 32 Maynard's Gate, Crowborough 1976. Plan of Furnace, Area I.



Plate X Maynard's Gate, Crowborough 1976. General view of site from east. Scale 2 m. (Photo. O. R. Bedwin)

was almost certainly where the bellows housing stood. The wheel-pit, also built of sandstone, had been extensively robbed out, particularly its upper courses, but the tail-race was relatively intact, especially where it became a culvert. The floor of the wheel-pit and tail-race consisted of very well preserved chestnut planks.

A cylindrical gun-casting pit, backfilled with rubble, was found near the mouth of the furnace and offset from it (Fig. 32). This pit was 3.0 m. deep and 1.5 m. in diameter; its wooden lining had been robbed out. Excavation revealed a regular series of pairs of horizontal wooden hoops (Plate XI); at the bottom of the pit was a ring of short, wooden uprights, 20–30 cm. high, butted firmly together to form a circle. Each of these uprights had an internal step which formerly supported a wooden floor; the top of each upright had clearly been chopped through and was all that remained of a full-length upright which originally came to the top of the pit. The construction of this gun-casting pit had therefore been similar to the only other example so far excavated, at Pippingsford, East Sussex (Crossley, 1975), though the latter had tapering sides.

Few small finds were recovered; the small amount of pottery which came from contexts dating the operation of the furnace suggested a late 16th/early 17th century date. Pottery and clay pipe fragments from the rubble in the wheel-pit and tail-race indicated that robbing out occurred largely in the later part of the 17th century.



Plate XI Maynard's Gate, Crowborough 1976. Gun casting pit. Scale 2 m. (Photo. O. R. Bedwin)

An area behind the bay on the north side of the stream was also excavated, as it was thought possible that another furnace might exist (Fig. 31, Area III). A large, deep pit was found, backfilled with blast furnace slag and sandstone rubble. Its purpose is not clear; it may have been a quarry for sandstone, and it appeared to have been dug before the bay was built.

Acknowledgements

The Sussex Archaeological Field Unit would like to thank the numerous people who made this year's projects possible, particularly the owners and tenants of the sites for allowing us to work on their land, and all those who helped in any way. The names of the following must be mentioned at this stage, although detailed acknowledgement will be made in the final reports: Mr E. D. Williams, Rev. J. Maynard, Mr J. West, Mr J. F. Martin, The National Trust, Mr F. Aldsworth, Mr I. Blair, Courts Ltd, Mr J. Houghton, Mr E. W. O'Shea, Mr L. Stevens, Mrs P. Stevens, Mr J. Dove, Mr P. Millmore, Lewes District Council, Mr G. Knight-Farr, Mr D. Williams, Mr C. Preece, Mr J. Bell, Mr K. Suckling, Mr A. Sayers, Miss J. Biggar, Mr C. Johnson, Mr P. J. Mansfield, Mr L. Wishart, Mr E. Holden, The East and West Sussex County Councils and particularly their Planning Departments, The Department of the Environment and particularly Dr G. J. Wainwright, The Shiffner Settled Estates, Miss B. Martin, Mr D. Martin, Mrs Zoë Vahey, Miss C. Unwin, Mr W. A. Kingston, Mrs Croggan, The Post Office Corporation, Mr and Mrs K. Astell, Miss P. Norman and Miss A. Macaulay.

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Late Bronze Age and earliest Iron Age in Soviet Central Asia*

(A Guide to the Recent Literature on the Subject)

by T. SULIMIRSKI

The present eighth report on the archaeological literature in the USSR that appeared approximately between 1961 and 1976 as announced in the preceding report (*Bulletin* 13, 1976: 211), is devoted to Soviet Central Asia; a few items missed in previous reports, or published after the completion of the preceding report, have been added. As previously, only books, pamphlets and periodicals accessible in the main archaeological libraries in London were considered; they have been handled in about the same way as formerly. It should be emphasised that some of the publications quoted in my reports on the late Bronze Age and Earliest Iron Age in the USSR (*Bulletin* 8–9 1970: 117) often relate to the area under review and I have had to refer to these again.

Publications of a general character

Among the publications which had to be considered in this section belongs, firstly, Professor S. P. Tolstov's Festschrift, *Istoriya, Arkheologiya i Etnografiya Sredney Azii* (*History, Archaeology and Ethnography of Central Asia*, Moscow 1968, editors A. V. Vinogradov, M. G. Vorobieva and others, 368 pages). The book, which contains 44 articles by various authors was not available in London, but it has been reviewed by Dr A. Häusler (in *Ethnographisch-Archäologische Zft*, vol. 12, 1971: 295–297) who briefly

* In this article the following are the chief abbreviations used:

| | |
|----------|--|
| AF | <i>Issledovaniya po Arkheologii SSSR (Artamonov Festschrift), Leningrad 1961</i> |
| AO | <i>Arkheologicheskie Otkrytiya</i> |
| ASE | <i>Arkheologicheskii Sbornik, Hermitage, Leningrad</i> |
| Bulletin | <i>University of London, Institute of Archaeology</i> |
| IANa | <i>Izvestia Akademii Nauk Tadzhikskoy SSR, Dushanbe</i> |
| IANTu | <i>Izvestia Akademii Nauk Turkmenkoy SSR, Ashkhabad</i> |
| IMKU | <i>Istoriya Materialnoy Kultury Uzbekistana, Tashkent</i> |
| KSIAM | <i>Kratkie Soobshcheniya Instituta Arkheologii AN SSSR, Moscow</i> |
| KSIIMK | <i>Kratkie Soobshcheniya Instituta Materialnoy Kultury AN SSR, Moscow</i> |
| MIA | <i>Materialy i Issledovaniya po Arkheologii SSSR, Moscow</i> |
| MKT | <i>Materialnaya Kultura Tadzhikstana, Dushanbe</i> |
| ONU | <i>Obshchestvennye Nauki v Uzbekistane, Tashkent</i> |
| SA | <i>Sovetskaya Arkheologiya, Moscow</i> |
| SE | <i>Sovetskaya Etnografiya, Moscow</i> |
| TANT | <i>Trudy Akademii Nauk Tadzhikskoy SSR, Dushanbe</i> |
| TKhAEE | <i>Trudy Khorezmskoy Arkheologo-Etnograficheskoy Ekspeditsii, Moscow</i> |
| TTAE | <i>Trudy Tadzhikskoy Arkheologicheskoy Ekspeditii, Dushanbe</i> |
| VDI | <i>Vestnik Drevney Istoi, Moscow-Leningrad</i> |



List of Sites

1. Sites in the Talass valley
2. Tergimen-Tay
3. Issyk-Ata
4. Kochkorka
5. Cemeteries in Ketmen-Tiube valley; Kutchu
6. Iakor
7. Zhary-Kechu, Dzhal-Aryyk, Dzhalpak-Tash
8. Sites around Lake Son-Kul; Chou-Tiube, Tash-Tulga
9. Akchiy-Karasy
10. Dzhasy-Kech on the Naryn
11. Saymaly-Tash
12. Settlements on the Karandaria river; Kurshab, Shosh-Tepe, Ana-Kyzyl, Karaul-Tepe, Karasadak
13. Aragul Uzgen district, Kosheter, Tort-Kul
14. Markhamatskii cemetery, Andizab oblast
15. Eylatan in North Fergana
16. Chust settlement
17. Sites on the Gava-Soaya; Arsifiskie cemetery
18. Dashi-Asht
19. Lashkerek on the Angren
20. Sites on Kuraminskii Range
21. Iangi-Iul on the Dzhan
22. Dalverzin-Tepe
23. Kayrak-Kum
24. Leninabad, Somgor
25. Ura-Tiube and its Mug-Tepa
26. Cemetery on the highway Sokh-Khaydarken
27. Tash-Kurgan, on the Margelan Say; Yangiabadskii cemetery
28. Kungay in Fergana
29. Tiuley-Ken, Kyzyl-Kurgan
30. Tort-Kul earthwork, Daraut-Kurgan



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|-----|--|-----|---|
| 31. | Kara-Bulak near Batken | 47. | Koy-Krylgan-Kala |
| 32. | Sangi-Navishta near Ziddi | 48. | Toprak-Kala |
| 33. | Akdzigla on the Alichurskii Shoulder | 49. | Karaash near Khumbuz-Tepe |
| 34. | Zharty-Gumbez, Mozhu-Tash near Kyzylrabort | 50. | Tok-Kala on the hight Toktaii |
| 35. | Langar-Kishta on the Vakhandaria | 51. | Cemetery of Tumek-Kichidzhik |
| 36. | Vybyst-Daryn on the Gunt | 52. | Kyuzeli-Gyr |
| 37. | Daray-Abkhorv; valley of the Oksu, Chikhona | 53. | Garry-Kyariz, Kapras fortress |
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| 42. | Kuchuk-Tepe in the Muzrabat steppe | 58. | Namazga-Depe, Tekken-Depe |
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| | | 66. | Elken-Depe |

commented on its more important articles. It may also be pointed out that a series of works by S. P. Tolstov and his collaborators dealing with Central Asiatic topics, quoted in my Report in *Bulletin* No. 7 (1968: 80), contains chapters in which archaeological remains of the first millennium BC in that area have been described and some specific problems raised by them discussed.

Next may be quoted 2 volumes of reports: *Central Asia in the Kushan Period*, with subtitle 'Proceedings of the International Conference on the History, Archaeology and Culture of Central Asia in the Kushan Period' held in 1968 in Dushanbe, Vol. I, Moscow 1974, 356 pages; Vol. II, Moscow 1975, 430 pages, published by the Editorial Committee under the auspices of the UNESCO, chairman B. G. Gafurov. The 2 volumes have been published in 2 languages, Russian and English. Also included are the texts of all official documents, addresses etc., at the Opening and Closing Sessions of the Conference, and all papers and communications delivered, with discussions. They were published in the languages in which they were read, and have been divided into several groups: general problems and studies; origin and ethnical history; Kushan history and chronology; language and writings; political system; culture and cultural relations; ideology and religion; archaeological discoveries; art; and Kushan heritage in early medieval art. All these topics relate to the period from the 2nd–1st centuries BC up to the 2nd–4th centuries AD.

A book that deserves mention is *Proiskhozhdenie zemledeliya (The Origin of Agriculture)*, 319 pages, 60 illustrations, with no indexes or summary, Leningrad 1974) by S. A. Semenov. The study is based on archaeological, ethnographic, historic and botanical materials. It contains a brief review of the earliest centres of agriculture in the whole world, including America – jointly about 100 pages of the text. The rest of the book is devoted to the history and development of irrigation, agriculture technique in general, tools, including the plough, and also to customs, practices etc., and to the history of the various plants and crops cultivated. It is based mainly on the data obtained by the relevant studies of ancient agriculture in Soviet Central Asia. The book *Mezhdru Pamirom i Kaspiem – Srednyaya Aziya v drevnosti (Between the Pamir Mountains and the Caspian Sea – Central Asia in Antiquity)*. Moscow 1966, 328 pages, with 2 maps) by B. Ia. Staviskii, was not available in London. It also deals with the beginning of agriculture in Western Asia, Anatolia and the Caucasus. A detailed study of the problems of the early agriculture is contained in the book *Drevnie orositelnye sistemy Priaralia (The Ancient Irrigation Systems of the Country on the Sea of Aral)*. 254 pages, 52 figures in text inclusive of a few maps, 10 half-tone plates, and a chronological diagram, Moscow 1969) by B. V. Andrianov. It deals with the history of irrigation, the development of the network and techniques of irrigation in the country on the Aral Sea from the beginning of the Bronze Age to the late Middle Ages. The book has been reviewed by Iu. A. Zadneprovskii (*SA* 1970–4: 266–268). O. Berenaluev (*AO* 1969: 431 f.) briefly reports on the results of his survey of the prehistoric irrigation network in the eastern regions of the Osh oblast in Kirgiz Fergana. An article by V. M. Masson (*SA* 1964–1: 12–25) on the historic position of the Central Asiatic Civilisation may also be mentioned. He points

to Central Asiatic achievements in the fields of agriculture, irrigation, architecture, etc., and also discusses connections of the country with Kazakhstan and Siberian peoples and the influence exercised on these.

Northern connections of Central Asiatic peoples has been the theme of a paper by N. L. Chlenova, *O svyazakh plemen Yuzhnoy Sibiri i Sredney Azii v Skifskuyu epokhu* (*Connections of the Tribes of South Siberia with those of Central Asia during the Scythian Period. Les Rapports et Informations des Archéologues de l'URSS, VII Congrès Internat. des Sciences Préhistoriques*, Moscow 1966: 191–200). She points out that the information of the Tagarskaya culture in the Minusinsk country in Southern Siberia (7th to 3rd centuries BC) was due to an influx of Mongolian ethnical elements in that area. But archaeological remains of that area also imply that in the 6th–5th centuries BC many Central Asiatic elements appeared in South Siberia which point to close relations between these countries. Mrs Chlenova thinks that this was due to migration northwards of some southern tribes consequent to the Persian (Darius I) conquest in Central Asia.

Issue 122 of *KSIAM*, 1970, has been devoted to the publication of several papers read at the Vth Conference on the problems of Central Asiatic Archaeology. Among those dealing with topics relating to the period under review is that by V. M. Masson (pp. 9–15) in which problems of Central Asiatic archaeology from the Palaeolithic to the Middle Ages have been briefly reviewed and discussed; M. A. Itina (pp. 49–53) devoted her paper to the history of the Bronze Age settlement of the steppe country extending between the rivers Syr-Daria and Amu-Daria; and I. N. Khlopin (pp. 54–58) deliberates on the origins of the Bronze Age culture in that area. The problem of trade-routes during the Bronze Age was the theme of the paper by A. Ia. Shchetenko (pp. 59–60) based on the archaeological material from Southern Turkmenia; and M. G. Vorobleva (pp. 77–80) discusses archaeological remains of the first millennium BC and early first millennium AD in Chorasmia and tries to establish, on their basis, the socio-economic processes that had taken place there during that period. A few other papers dealing with topics related to particular regions have been quoted in the relevant sections below, except for the 4 ones quoted here. In 1 of these, Ia. A. Sher (pp. 106–109) discusses methods used by scholars of the natural sciences and the main problems of Central Asiatic archaeology; the palaeogeography of Akcha-Daria has been dealt with by A. S. Kes with two associates (pp. 110–113); G. N. Lisitsyna (pp. 114–117) tries to establish periods in the irrigation agriculture of the south of Central Asia and the Middle East; and V. V. Ginsburg (pp. 118–121) reports on the results and prospects of palaeoanthropological investigations in Central Asia.

G. F. Korobkova and V. A. Ranov (*KSIAM* 136, 1973: 77–80) describe flint implements generally considered as terminals of agricultural hoes of the type known from the second Tutkaul horizon. The earliest agricultural implements of this type appeared by the end of the 7th millennium; in Central Asia they appeared in the 8th–6th century BC. Of interest is the article by G. V. Shatskii (*IMKU* 8, 1969: 76–91), who says that his study of a large number of petroglyphs in the upper course of the Chadaksy in Eastern Uzbekistan, in the Kuraminskii Ridge about 10 km south-east of Tashkent, indicates that

they document the attempt of ancient inhabitants of these mountains to domesticate ibexes (rock-goats).

Two articles by B. A. Litvinskii may be mentioned here. In one of these, *Oruzhiye naseleniya Pamira i Fergany v sakscoe vremia* (Arms of the Population of Pamir and Fergana in the Saka Period, *MKT* I, 1968: 69–117) bronze and iron battle-axes, pick-axes, daggers and arrowheads, of various types, their origins and their geographic extent are discussed, and their development from about the 7th to 3rd century BC is traced. In the other article *Khronologiya i klassifikatsiya sredneazyatskikh zerkal* (The Chronology and Classification of Central Asiatic Mirrors, *MKT* II, 1971: 34–67) the same author established the typology and chronology of the various types of bronze mirrors from Central Asia of the period from the 7th century BC to the 7th century AD.

The results of anthropological studies have been presented in a few articles. S. P. Tolstov (*SE* 1966–2: 174) emphasises that the cranial material from the Sacian barrow graves at Tagisten and Uygarak in the delta of the Syr-Daria, includes many female Mongoloid skulls, in particular those of the 4th to 2nd centuries BC. In her 2 articles, V. Ia. Zezenkova (*IMKU* 4, 1963; 8, 1969: 161–168) published the results of her study of cranial material from the Kyzyl-Tepe cemetery and from other ones of the 5th–6th centuries AD in the Bukhara oblast, and also from Sacian barrow graves of the 5th to 3rd centuries BC at Kalkansay in the same oblast. This material, together with that from other Central Asiatic sites, implies that during that period a gradual mingling took place of Sacian newcomers with the local population of ancient Sogdiana, Bactria and Margiana.

Attention may also be drawn to an article by I. V. Pyankov (*MKT* II, 1968: 68–79) in which he discusses the list of all eastern satrapies of the Achaemenid Kingdom quoted by Ctesias.

Finally, 2 English translations of books by Soviet authors deserve mention, as does a book by a western scholar, all devoted to the prehistoric past of Soviet Central Asia. One of these is *Turkmenia (Central Asia) before the Achaemenids* (London 1972, Ancient Peoples and Places. 219 pages, 33 line drawings, 53 half-tone plates, 3 maps) by V. M. Masson and V. I. Sarianidi, translated and with a preface by Ruth Tringham. The other is *Central Asia* (London 1969, The Cresset Press, in the series Ancient Civilisations. 252 pages, 145 illustrations, maps and chronological graphs) by Aleksander Belenitsky, translated by James Hogarth. It covers the time from the Palaeolithic to the Arab conquest in 674 AD. The third book deals with about the same period as the latter but covers, besides Soviet Central Asia, also Kazakhstan. This is *Archaeology in Soviet Central Asia* (Leiden-Köln, 1970, E. J. Brill, XVIII plus 217 pages, 19 maps, 39 figures in text, 67 half-tone plates; provided with several indexes) by Grégoire Frumkin, a very fine book in the series *Handbuch der Orientalistik*. It contains a brief review of archaeological data and a concise historical outline of each of the countries and special regions of this area and their relevant bibliography.

Art and beliefs

The fine, well produced booklet *Iskusstvo Sredney Azii* (*The Art of Central Asia*,

with a sub-title 'The Ancient Period, 6th century BC to the 8th century AD'; 256 pages, 179 illustrations, many of these coloured. Moscow 1974) by B. Ia. Staviskii, briefly characterises the development of Central Asiatic art during the period mentioned in the sub-title. It started when a larger part of Central Asia was incorporated into the Achaemenid Empire; it simply vanished at the turn of the 8th century AD at the time of Arab conquest, when the population of the whole country began to be entirely imbued with the Moslem ideology. Four stages have been distinguished in the evolution of this art, and its somewhat differing development in various areas of the country has been discussed by the author. A more specialised theme is dealt with in the book *Sredneaziatskaya terrakota epokhi bronzy (Central Asian Terracottas of the Bronze Age)*. Moscow 1973, 210 pages, 44 plates; a summary in English) by V. M. Masson and V. I. Sarianidi. It is devoted mainly to female figurines excavated in Southern Turkmenia, to their comparison with similar ones of Mesopotamia, Anatolia and of other countries, and their associated religious beliefs. A similar study of terracotta figurines of the Sogdian School of Tadzhikistan, their classification and comparison with similar ones found in the adjacent countries of the Kushan period, from the 2nd century BC to the 4th century AD, has been published by V. A. Meshkeris (IANTa 1968-2: 3-20). Three terracotta figurines of mounted riders, found in the layer of the 1st century BC to the 4th century AD of the ancient town of Khalchanaian on the Surkhandaria near Denau in Uzbekistan, some 200 km south-east of Samarkand, was the theme of a study by G. A. Pugachenkova (MIA 130, 1965: 248-252). Their position among similar figurines from the Middle East, where they have been known since the third millennium BC, has been discussed. Their appearance at Khalchanaian might have been connected with the incursion into that country of northern mounted nomads. A few years later, a large sized very well-produced book printed on art paper was published by the same author, G. A. Pugachenkova, *Skulptura Khalchanaiana (The Sculpture of Khalchanaian)*, Moscow 1971, 204 pages, 56 figures in text, 145 half-tone illustrations on plates). It deals with all sculptures excavated in that city. Early settlement on that site was set up by the middle of the first millennium BC, but the town was built and became an important centre in the 3rd century BC and was in existence till the 3rd century AD. Its architecture exhibits a strong Hellenistic tradition and similarly the sculpture shows the same general tendencies as Hellenistic sculpture.

The origin and symbolic meaning of signs met on figurines of the Anau culture of the Namazga IV-V periods of the Bronze Age, has been deliberated on by E. V. Antonova (SA 1972-4: 7-18). According to the Summerian and proto-Elamic evidence, they belonged to the field of the fertility cults. L. I. Khlopina (KSIAM 132, 1972: 59-64) distinguished a number of vessels of the Namazga VI kitchen ware, and established its rate in respect of the undecorated pottery. She also discusses the ideological meaning of its ornament. Finally, Iu. A. Rapoport in his book *Iz istorii religii Drevnego Khorezma (ossuarii) (On the Religious History of Ancient Chorasmla - Ossuaries)*. Moscow 1971, TKhAEE VI, 128 pages, 56 figures) discusses problems connected with the ossuary type of burials. Mention may also be made to the article by I. V. Pyankov (MKT 1, 1968:

55–68) in which various sayings of Ctesias and fragments of his writings are discussed. The conclusion of the author is that, according to the earliest traditions, Zoroaster-Zarathustra lived in Bactria, and that Bactria was the original country of Zoroastrianism.

Of interest is the article *Archaeological Light on Bactrian Cults* by G. A. Pugachenkova (*VDI* 1974–3: 124–135) devoted to the study of the many different religious currents distinguishable in Bactria during the Kushan period (from the 3rd–2nd century BC to the 1st to 3rd centuries AD). Greek and Near-Eastern cults were then officially recognised and Buddhism began to penetrate, but the aboriginal population of the country still kept to its ancient local cults. In the long run, a mingling of various cult elements and ideas took place, of Avesta, Greek, Indian, Scythian and local Bactrian.

In connection with this article the interesting study by G. P. Snesev, *Relikty domusulmanskih verovaniy i obryadov u Uzbekov Khorezma* (*Relics of Premuslim Beliefs and Ceremonies among the Uzbeks of Khorezm*. Moscow 1969, 336 pages) deserves mention. Topics discussed in the various chapters are: Khorezmian demonology and relics of Shamanism; magic of the family and national ceremonies; survivals of early forms of religion and of Zoroastrianism in the funeral rites; relics of fertility cults in production and life; Pre-Muslim elements in the cult of saints; survivals of animal cults and their place in Khorezmian ceremonial complexes.

Next are the petroglyphs which, in fact, form an extension of those of Kazakhstan dealt with in the preceding Report (*Bulletin* 13: 216 ff.).

Thus V. M. Gaponenko (*APDT* 1963: 101–110) reports on her finds in the Kenkol valley (Kirgizia) at Kurgan-Tash and in other sites, and comments on their differing styles and on the various techniques by which they were executed. She distinguishes three periods in which they were completed, the first one extending over the second and early first millennia BC; the next one of the second half of the first millennium BC, the period of the 'Scythian' style of the Saco-Iranian era; and the third one, that embraced the 6th to 8th centuries AD, the 'Turcic' period. In another report by G. Pomaskina (*AO* 1968: 450–452; 1969: 434 f.) petroglyphs at site Saymaly-Tash some 200 km north-east of Fergana, about 3000 m above the sea-level are described. They were found in 3 areas, jointly in about 16 sites, each with 50 to 100 drawings. Representations of ploughing with ploughs of West Asiatic type imply that the country had connections with the South. The earliest petroglyphs go back to the turn of the first millennium BC and first millennium AD, and the latest ones to the Middle Ages. Later, the same author (*AO* 1972: 497; 1973: 531–533) announced the discovery of a large number of petroglyphs in the valleys of the Ketman Ridge and in the region about 50 km south-east of Uch-Terek, and in several other sites. The petroglyphs were made on very large stone boulders that lay along the northern bank of Lake Issyk-Kul in north-east Kirgizia, at a relatively small distance from the border of Kazakhstan. A small number of petroglyphs have also been recorded in the area west of the Lake, in the district of Kochkorka; some of these presumably were of the Sako-Unsun period. Finally, I. Kozhombardiev (*AO* 1971: 546 f.) reports on petroglyphs at Chaar-Tash, a site difficult of access, situated some

4000 m above the sea level, where over 700 drawings were copied, situated in 4 distinct sites. In this region also 60 barrow graves were investigated in 3 different Sacian cemeteries, but no particulars were given relating to their burials.

Closely connected with the South Kazakhstan petroglyphs are those found in the narrow north-eastern extension of Uzbekistan, about 50 km wide, wedged between Kazakhstan and Kirgizia, reaching the Karatau Range. There D. Kabirov (*AO* 1970: 410 f.) discovered over 3500 petroglyphs scattered at several points, which present some 20 kinds of animals both wild and domesticated, the earliest ones being of the Bronze Age, probably of the 3rd or second millennium BC.

A large number of petroglyphs was discovered south of Fergana, in the Gorno-Badakhshan oblast by V. A. Ranov and A. V. Gurskii (*SE* 1966-2: 110-119). They published their brief description and have shown their geographic position on a sketch map. The drawings include figures of ibexes, horses, and of shooting and hunting scenes, etc. The earliest are of the Late Bronze Age, then of the 'Scytho-Sarmatian period', and the later ones are up to the 8th century AD. In the latter group tamga signs appear. Entirely different are drawings of the time after the Moslem conquest.

Two reports by V. A. Zhukov and V. A. Ranov (*AO* 1971: 540 f.; 1972: 492) record the discoveries of petroglyphs further south, in the Pamir mountains close to the Soviet-Afghanistan border. The first report contains a brief note on petroglyphs on the river Akdzhigla on the North-Alichur Shoulder, c. 3800 m above the sea level. In the second one, the petroglyphs of Badakhshan, on the Vybyst-Dary near the village of Debasta on the river Gunt and at Langar-Kishta close to the junction of the Vakhandaria with the river Pamir were dealt with. At Debasta 2000 rock drawings were photographed or drawn; they were mostly placed at c. 3500 m above sea level. Their main subject was figures of ibexes, and the most frequently met scenes were rows of horsemen with bows, evidently armed for hunting. At Langar-Kishta on the Shakhdary Range over 6000 drawings were recorded drawn mainly on flat granite plates; they extended over a distance of over 5 km at about 3000 to 3700 m above the sea level. All the drawings mentioned above were of 3 distinct periods. The earliest, of the first millennium BC, were the figures of ibexes and stags; of the period approximately 5th to 10th centuries AD were the figures of horsemen and scenes of hunting ibexes; the third, the largest group, those depicting some battle scenes and assaults of peaceful populations by armed men, are of the 19th and 20th centuries AD. Of particular interest is a drawing of a musical instrument called 'rubob' for the first time recorded in this area although quite frequent in other regions. Finally, an article by A. M. Mukhtarov and V. A. Ranov (*JANTa* No. 4/79, 1972: 69-75) may be mentioned. The authors briefly describe a large group of petroglyphs (ibexes, dogs, human figures, etc.) of the 1st to 8th centuries and the latest groups of the 16-17th centuries. They were discovered on rocks at c. 3800 m above sea level at Sangi-Navishta near Zidda, about 60 km north of Dushanbe. It is of interest to note that the earliest petroglyphs in that area consist of tamga signs.

A different subject has been dealt with by R. L. Sadokov in his 2 paperbacks. One of these is *Muzykalnaya kultura drevnego Khorezma* (*Musical Culture of Ancient*

Chorasmia, Moscow 1970, 140 pages printed on art paper, profusely illustrated with 4 coloured plates; a large bibliography). Described there are the actual relics and a series of ancient drawings of musical instruments found in the remains of ancient Chorasmian settlements and those of other Central Asiatic countries and also in the ancient Middle East. Their further development up to the present has been followed. The other booklet, *Tysyacha oskolkov zolotogo saza (Thousands of Fragments of a Golden Musical Instrument)*, Moscow 1971, 170 pages, many figures (drawings and half-tone, several full-page)), is devoted to 'musical archaeology'. Traces of all forms of ancient music preserved in the stories by ancient writers, in legends, and relics of ancient musical instruments found in the archaeological material and their graphic representations, etc., have been registered, discussed and their history studied. The study under review has been to a great extent based on data taken from ancient and present material from Uzbekistan and from other countries of Central Asia.

Kirgizia

A review of the archaeological works in Kirgizia in 1967 has been given by A. K. Abetekov jointly with 5 other archaeologists (*AO* 1967: 356–360); and a list of archaeological publications of the Kirgiz Academy during the period 1957–1967 has been produced by N. N. Skakun (*SA* 1971–4: 275–280). Another synopsis of the archaeological literature of Kirgizia, published during the Soviet period, has been completed by D. F. Vinnik (*SA* 1967–4: 74–92). Some general questions relating to the archaeology of Kirgizia have been deliberated on by P. N. Kozenko (*KSIAM* 122: 67–76).

The paperback *Drevnyaya i rannesrednevekovaya kultura Kirgistan (Ancient and Early Medieval Culture of Kirgistan)*, Frunze 1967, 133 pages) may be mentioned, although out of its 5 chapters only 1, by A. K. Abetekov, deals with the period of our concern here (pp. 30–52). Its main theme is the 'Early Nomads' of the Chu valley in the region north of Frunze, close to the border of Eastern Kazakhstan. The results of excavation of 4 barrow grave cemeteries of this people have been described; in their burial rites and contents, the graves were very similar to those of the Usuni in the adjoining area of Eastern Kazakhstan, the country of Semirechie of the 4th to 1st centuries BC.

In the earlier report, A. Abetekov (*KSIAM* 93, 1963: 93–95) mentions the results of his investigation of a Late Bronze Age cemetery of the 'ograde' type at Tegirmen-Tay, about 25 km south-west of Frunze in northern Kirgizia. Its Andronovo type pottery was undecorated and analogies may be found in the pottery of Tash-Tiube. Results of excavation at Issyk-Ata, in about the same region but further to the east, have been reported by A. K. Abetekov and Ia. A. Sher (*AO* 1974: 547–549). Its mounds, as those of the Chu valley, were likewise raised of stones mixed with earth. One, barrow No. 9, differed from all others in that over the human burial 3 dogs were buried; its pottery was wheel-turned and characteristic of the local settled population, differing from that of the nomad Usuni.

A survey of Ia. A. Sher (*KSIAM* 60, 1964: 68–74) of 1960–1962 in the region of Lake Son-Kel in central Tian-Shan, some 120 km south-west of Issyk-Kul, resulted in the discovery of the remains of 2 long-lived settlements situated on a ridge 3016 m above the sea level. At Chou-Tiube in the same region barrow graves of the Early Nomads (the 6th century BC to the 4th century AD) have been recorded. Of special interest was a stone construction found at Tash-Tulga. This was a chain of 9 large layouts, each consisting of 8 large boulder-stones, extending from north to south, and in the centre of this row stood a stela. Excavation gave no clue for the establishment of the date of the relics; similar constructions appear in the Altai Mountains in Tuva and Mongolia, and in 1 of these a Mayemirskaya hoard (7th to 5th century BC) has been found. Possibly of the same date may have been the Tash-Tulga construction. The author also mentions that in the region above many petroglyphs have been found, some of the earlier period, but many of the 6th to 9th centuries AD.

A. K. Abetekov and Iu. D. Barudzin (*APTD* 1963: 17–31) report on their investigation of Sako-Usuni remains in the Talas valley in North-west Kirgizia, where about 100 barrow graves in 12 cemeteries were excavated. They were in their construction and equipment of the same type as the Usuni burials of Semirechie further north. The country was seized by the Usuni advancing there from the north and the authors point out that the river Talas was then the border between the Usuni and the Kangyuy people. The date of the cemeteries was from about the 3rd century BC to the 2nd century AD. Of a later date, the 1st to 5th centuries AD, was the cemetery on the river Kenkol and at Tash-Tobe, some 30 km north-west of the town of Kenkol, all in the same region, where jointly about 50 barrow graves, chiefly with 'catacomb' burials, were excavated. Two reports on the Kenkol cemetery were published by I. Kozhombierdiev (*KSIIMK* 80, 1960: 70 ff.; *APTD*, 1963: 33–77). Four barrow graves of the Sacian-Usun culture were also excavated further east, at Iakor on the shore of Lake Issyk-Kul, as reported by G. Pomaskina (*AO* 1972: 497).

I. Kozhombierdiev and N. G. Galochkina (*AO* 1968: 449 f.) briefly report on their investigations at 3 points in the area of the construction of a water reservoir: at Zhazy-Kechu a cemetery of the Bronze Age of the 'ograda' type of the middle of the second millennium BC was excavated, and at Dzhal-Aryk a settlement of the Bronze Age was investigated. Nearby was the barrow grave cemetery called Dzhal-Aryk II, consisting of over 100 mounds of the Sacian period; 7 larger mounds, for the most part ransacked, were excavated. Bronze parts of horse harness were found and among these a silver plaque decorated with a figure of a winged horse. Twenty-five mounds within a barrow grave cemetery of 700 mounds, of the 1st to 6th centuries AD were also investigated.

Investigations during the subsequent years of the relics above, and of a number of barrow grave cemeteries in the valley of Ketmen-Tiube (Kara-Kash, Sary-Dzhon, Kayrak) of the time span from the Bronze Age to the 5th–6th centuries AD, were related by I. Kozhombierdiev (*AO* 1969: 432 f.; 1971: 546 f.; 1972: 496). All 106 mounds of the Sacian period cemetery at Dzhal-Aryk II were excavated. Many arrowheads, quivers, iron

daggers, iron, bronze and gold ornaments were found, among the latter some in the shape of lion figures, and a gold ear-pendant; there were also bronze mirrors. The results of investigation of the other barrow grave cemetery, with the 'catacomb' or 'niche' graves of the 1st to 6th centuries AD at Dzhal-Aryk I were only summarily described. At Kara-Kash, at a distance of about 1 km from the cemeteries mentioned above, 5 large Sacian barrow graves were excavated, all entirely robbed; only some pottery and a few small gold ornaments were found, some of which were in the shape of bracteates. Furthermore, as reported by V. P. Mokrynin (*AO* 1974: 554 f.), 23 small mounds were excavated at Dzhat-Aryk on the other, left bank of the Chu; they were mostly of the Early Nomads, similar to those in the cemeteries described above, but some yielded items of an archaic character, and several were of the Bronze Age. A brief report by P. P. Gavriushenko (*AO* 1973: 523 f.) gives account of excavation of 2 cemeteries in the same Ketmen-Tiube valley, at Kutchu, where 10 mounds out of its 39 were investigated, and at Dzhalpak-Tash 8 mounds were excavated. Bronze mirrors, beads, pottery, iron articles, gold personal ornaments, were among grave-goods. A few years earlier, the same author jointly with 3 associates (*AO* 1966: 337–341) briefly reported on the results of archaeological investigation of the area to be flooded by the Andizhanskii water reservoir (in construction). A settlement of the 4th to 1st centuries BC was partly excavated at the junction of the Yass with the Karadaria. A number of barrow graves of 2 cemeteries in the Ketmen-Tiube valley were also excavated; in 1 cemetery out of 270 mounds 40 were excavated of the period from the 3rd–2nd centuries BC to the 5th–6th centuries AD, and in the other 10 mounds were excavated out of its 120 barrow graves.

Further south, on the right bank of the Naryn, the main tributary of the upper Syr-Daria, at Akchiy-Karasy, 20 barrow graves of the 6th to 3rd centuries BC were excavated, all almost entirely robbed. Only a few articles were found there: an akinakes dagger, bronze mirror, beads, and a number of small gold ornaments. There was also another group of barrows of a later date, which were likewise ransacked, as reported by I. Kozhombardiev (*AO* 1973: 529 f.). At about the same time N. Galochkina (*AO* 1973: 524 f.) investigated a cemetery at Dzhazy-Kech on the left bank of the Naryn, near the highway Frunze-Osh. Sixteen graves of the 'ograde' type of the Bronze Age were excavated, and a few mounds (out of about 120) of the Early Nomads barrow grave cemetery Dzhazy-Ketch II situated nearby were also investigated.

D. F. Vinnik and G. A. Brykina (*AO* 1967: 361–363) briefly communicate the results of their investigations in the valleys of the Yass, Kara-Daria and Kurshab. Remains in the lower layer of the Kurshab earthwork represent the Late Bronze Age culture typical of the Fergana valley. Lower layers of 3 partly investigated settlements, Shosh-Tepe, Ana-Kyzyl and Karaul-Tepe, were of the Early Iron Age. It has also been established that the hand-made painted pottery found mainly in East Fergana, appears also in the region under review in the second half of the first millennium BC. It often appears jointly with wheel-turned pottery which outlasted it, being found in relics up to the 5th century AD. The barrow graves found in that region, with niche-graves or 'catacombs' were of the first half of the first millennium AD. Several were excavated at Karasadak.

A few reports relate to eastern Fergana. D. F. Vinnik (*AO* 1969: 433 f.) reports on investigation in the Uzgen district (Osh oblast) where at Aragul 14 barrow graves were excavated which evidently were symbolic burials of persons who fell in foreign lands. Only in 2 graves a few animal bones were found. At Kosheter 2 well furnished graves were uncovered; one, in a barrow of the 6th to 4th century BC, was of the Sacian type, the other, partly robbed in a barrow was of the 1st to 5th century AD. A part of the Tort-Kul earthwork, which is 190×270 m in area and lies in the centre of the oasis was also excavated. It was of the 5th to 1st centuries BC. In another report Iu. D. Baruzdin and A. G. Podolskii (*KSIAM* 85, 1965: 127–129) describe and discuss a bronze figurine of the 3rd–4th century AD found in a female burial in barrow grave No. 8 of the Kara-Bulak cemetery near Bakteni, on the foot of the Turkestan Range in Kirgiz Fergana. The figurine, in its style, shows marked Indian influence. Furthermore, Iu. D. Baruzdin with A. M. Belenitskii (*KSIAM* 86, 1961: 21–27) discuss a female grave (barrow No. 60) of the 2nd to 4th century AD in which several small decorated bronze plaques and 2 medallions of Central Asiatic manufacturers were found.

S. S. Sorokin (*AF* 1961: 160–166) deliberates on the economy of the nomad people who lived in the river valleys of Fergana, and buried their dead in a series of barrow grave cemeteries; among these are the cemetery at Shart of the 6th–5th centuries BC and at Tiuley-Ken on the river Gulcha of the 6th to 4th centuries BC; as well as the cemeteries at Kyzyl-Kurgan on the Gulcha of the 3rd to 2nd centuries BC and settlements to which they belonged and at Daraut-Kurgan in the western part of the Alayskaya valley of the 2nd–1st centuries BC. The people were stock-breeders, like other nomads of the mountains; agriculturalists penetrated there only by the very end of the first millennium BC, although agriculture was the basis of the economy of the peoples of the Fergana valley already in the Bronze Age. The reciprocal relationship of the nomad stock-breeders and the settled agriculturalists of the valley of the period up to the Middle Ages has been discussed by the author.

Finally N. G. Gorbunova (*ASE* 3, 1961: 171–194) described the results of the excavation of the barrow grave cemetery at Kungay, 40 km south-east of Fergana, where 21 mounds of various shape and size were investigated and were found to be of the 5th to 3rd centuries BC.

Of interest is the report by O. Berenaliev (*AO* 1968: 452 f.) on the results of his survey of traces of the ancient irrigation network in Southern Kirgizia. Ancient and medieval settlements of the region lie within this network. The author also comments on some particulars of the irrigation system applied there, distinguished by him in a few of its parts.

Tadzhikistan

The Tadzhik Soviet Republic is a country, very irregular in its shape, within which 3 main areas may be distinguished. A special work has been recently published dealing with its history and the prehistoric past, *Tadzhiki – Drevneyshaya, Drevnyaya i Srednevekovaya Istoriya* (*The Tadzhiks – The Most Ancient, Ancient and Medieval*

History, Moscow 1972, 664 pages, with a large bibliography and indexes, jointly 73 pages, many unnumbered illustrations, several coloured, a few folded maps) by B. G. Gafurov. The first part of the book (54 pages) is devoted to the prehistoric past of the country, from the Palaeolithic to the Achaemenid conquest in the 6th century BC. The second part (124 pages) deals with the period from the 6th century BC to the 4th century AD, to the end of the Kushan period; events and the development that took place during that time have been discussed against the background of Central Asiatic political and cultural history. The remaining part of the book is dedicated to later periods.

Another publication of a general character is the book in English, *Kushan Studies in USSR*. — Papers presented by Soviet Scholars at the UNESCO Conference on History, Archaeology and Culture of Central Asia in the Kushan Period, Dushanbe 1968 (published in India 1970) by B. Gafurov, M. Asimov, G. M. Bongard-Levin, B. Ya. Stavisky, B. A. Litvinsky and others. It contains 4 articles by 5 authors and 31 abstracts of papers by 34 scholars who discuss various aspects of the Kushan Civilisation of the period from the 2nd century BC onwards. It has been emphasised there that the Kushan Civilisation was of great importance and significance for the history of peoples of a large area, of India, Soviet Central Asia, Afghanistan, Pakistan and of other countries. The full texts of proceedings of the International Kushan Conference at Dushanbe in 1968 (all UNESCO documents, official addresses etc., 30 papers read, all communications and discussions) have been published in 2 bilingual volumes, in English and Russian, with some papers in French, (editor B. G. Gafurov). The publication has already been mentioned in the first Section of this report (p. 76).

The achievements of Tadzhik archaeology during the 50 years of Soviet rule have been briefly presented by B. A. Litvinskii (*SA* 1967—3: 103—123). There is a concise survey of all important sites investigated during that period and a sketch map gives the idea of the extent of these. In footnotes the large literature relating to the publication of the results and progress of excavations and documentation on them has been quoted. One of the outcomes of the latter is the book *Drevnie kochevniki 'Krysha Mira'* (*Ancient Nomads of the 'Roof of the World'*, Moscow 1972, 270 pages inclusive of 33 tables; 71 figures in text, 47 drawings, 24 photographs, indexes, a very large bibliography, a map) by the same author, B. A. Litvinskii. This is a study of the Sacians of the Pamir highland (3500 to 4500 m above sea level); their cemeteries are described together with their material and spiritual culture, and their weapons; their origin, the diffusion of Sacian tribes in Central Asia, ecological conditions in the country, the economy of the Sacian peoples, social position of tribesmen, relations with the neighbouring peoples, etc., during the period from the 5th to the 1st century BC have also been discussed. In this context mention should be made of the article by I. V. Pyankov, *Saki (Soderzhanie ponyatiya) (Sacians — Contents of the Notion. IANTa* 3 (53), 1968: 12—19) in which the scope of the name Sacians has been discussed.

A special study by B. A. Litvinskii, *Oruzhie Pamira w Sakskie vremena* (The Weapons of Pamir during the Sacian Period, *MKT* 11, Dushanbe 1968, 69 pages) is devoted to the discussion on the armament of the people. A report by the same author (*TANT* XXXI,

1961: 50–62) contains a brief description of his excavation of a few cemeteries in the south-eastern corner of the country close to the point where the borders of 3 countries, Soviet, Afghan and Chinese, meet at Zharty-Gumbez and Mozhu-Tash, south of Kyzylrabet. The author emphasises that this area, the valley of the upper Oksu, was densely populated in antiquity.

Further west, at Daray-Abkhorv in the Pamir Mountains, in the region of the Piandzh (the upper course of the Amu-Daria), a few slab-cist graves were investigated under stone-built mounds. They also had a few secondary interments with dismembered skeletons. Their grave goods were of the 2nd–1st centuries BC, the final stage of the 'Sarmatian' (Sacian) period. Of interest was an iron dagger of Tibetan character of that period, found there, as reported by A. N. Zelinskii (*SA* 1960–3: 296–300). In the same region a small Sacian cemetery was investigated by A. D. Babaev (*IANTa* 3–53, 1968: 20–27) at Chikhona, district of Ishkashim, at the foot of the Bakhan Range. Ten small stone-built mounds were excavated; graves were richly equipped and female burial had bracelets, mirrors, and various ornaments: pottery and other grave goods have their analogies in late Sacian graves of East Pamir. They were of the period from the 3rd to 1st centuries BC but there were also burials of a later date, up to the 2nd century AD.

Finally, the article by S. M. Abramzon and N. A. Kislakov, *Dobycha zolota – odyz iz drevnikh promyslov gornykh Tadzhikov* (Extraction of Gold – One of the Ancient Industries of the Highland Tadzhiks, *SE* 1971–2: 114–129) deserves mention. The authors point out that washing the gold-yielding sand in the rivers of the Pamir Mountains began in antiquity, and that descriptions exist from the 9th–10th centuries AD, especially along the banks of the Dzheykush. The authors concentrate, however, on the description of the present local exploitation of golden sand in the region above, and of methods and implements used, although nowadays the industry has lost its former importance.

Further west, in south-western Tadzhikistan south of Dushanbe, an ancient agricultural settlement was excavated at Bolday-Tepe in the valley of Vakhsh, as reported by T. I. Zeymal (*MKT* 2, 1971: 80–101). It dates from the 5th to 3rd centuries BC, and the author considers it to be the earliest settlement of settled agricultural people in that country. He discusses its pottery and points to similarity with that in other countries. In the same region, at Tigrovaya Balka, a barrow grave cemetery of the Bronze Age Vakhsh culture (called after the river) was excavated, as reported by L. T. Pyankova (*SA* 1974–3: 165–180). It lay in the district of Shaarguz, on the right bank of the Vakhsh and consisted of 130 barrow graves 116 of which were investigated, all except for a few provided with a niche in the shaft. The author points out several marked similarities of the plan of the cemetery and its grave good to those of agricultural peoples of Central Asia and Afghanistan, which suggest some common ancient traditions. She dates the cemetery at the second half of the second millennium BC.

Results of investigation of 3 barrow grave cemeteries in the valley of the Kafirnigan, a right bank tributary of the Amu-Daria, in the south-west of Tadzhikistan, close to its border with Uzbekistan, some 100 km. east of Termex, have been published by A. M.

Mandelstam, *Pamyatniki kochevnikov Kushanskogo vremeni v Severnoy Baktrii* (Relics of the Nomads of the Kushan Period in Northern Bactria, Leningrad 1975, *TTAE* VII, 228 pages, including 62 illustrations in text, 44 tables and 17 pages of cranial measurements). Many items of the archaeological material from these cemeteries, which were of the 2nd century BC, exhibit a striking similarity to those characteristic of the Sarmatians. This implies that by the end of the 2nd century BC some Sarmatian tribe must have arrived there from the north, but it is hard to identify them with tribes whose name is known from written records. The newcomers did not exterminate the local population of the country nor did they destroy their husbandry. The Kushan period which began at that time was an era of great flourishing of the culture and also of the economy of Central Asia.

A study by P. T. Samoylik, published in 2 subsequent articles (*IANTa* 2-72, 1973: 12-19; 4-74, 1973: 32-40) is devoted to the technique of manufacture of large storage vessels up to 1 m high, and their chronology; such vessels have often been used in some regions as ossuaries. A large mass of sherds of these vessels have been found in the town of Ura-Tiube, in particular in the remains of its citadel called Mug-Tepa. The earliest vessels of this type were of the period from the 4th to 2nd centuries BC. At Chumy Ura-Tiube they were also used from the 1st century BC to 1st century AD and also in the 7th-8th centuries AD. In the later periods they were wheel-turned.

The book *Drevnosti Kayrak-Kumov* (*Antiquities of Kayrak-Kum*, *TANT* XXXIII, 1962) has already been mentioned in *Bulletin* 8-9; 144. Its section *Pamyatniki epokhi bronzy i rannogo zheleza Kayrak-Kumov* (Bronze Age and Early Iron Age Remains of Kayrak-Kum, pages 89-300, with plans, maps and many illustrations) by B. A. Litvinskii, deals with the remains of the period under review in the area on the Syr-Daria west of Leninabad. The region is rich in copper ores which, according to archaeological evidence, were exploited in antiquity. The author discusses the typology of bronze articles and shows on graphs the results of their spectographic analysis. He also debates topics relating to the history of the entire country of Fergana, its anthropology and racial questions. Two paperbacks by the same author, B. A. Litvinskii, may be mentioned. In fact they are 2 volumes of a series called *Mogilniki Zapadnoy Fergany* (*Cemeteries of West Fergana*). One of these, volume II of the Series, is *Keramika iz mogilnikov Zapadney Fergany* (*Pottery from Cemeteries of West Fergana*, Moscow 1973, 202 pages, 56 plates) and is devoted to the wheel-turned pottery from burial grounds of the country of the first millennium AD and includes discussions of its technology, classification and date. The other, volume III of the Series, *Ukrasheniya iz mogilnikov Zapadnoy Fergany* (*Jewellery - Beads and Ornaments from the Cemeteries of West Fergana*, Moscow 1973, 211 pages, 19 plates) contains the description and typological classification of objects of adornment, bracelets, roundels, brooches, earrings, etc.; its second part is devoted to beads, Egyptian faience, etc., all of the first millennium AD.

N. N. Negmatov (*AO* 1972: 489-491) reports that during trial excavation in Leninabad occupation layers have been discovered full of pottery of the 4th to 3rd centuries BC. Farther north, at Dashti-Asht, district of Asht, on the southern foothills of

the Kuraminsko-Karamazorskii Ridge, 25 barrow graves have been excavated by E. D. Saltovskaya (*AO* 1974: 544–545), of the Early Iron Age of Fergana, of the first quarter of the first millennium BC. They were briefly described by the author.

One of the earliest settlements of Western Fergana was Somger, situated on the very active ancient commercial crossroads, 22 km. north-east of Leninabad. N. N. Negmatov (*MKT* 1, 1968: 116–141) reports on the results of excavation of its earthwork, and comments on the stratigraphic sequence of its occupation layers, and on the history of the settlement as demonstrated by the latter. The earliest pottery found there was of the period from the 3rd century BC to the 4th century AD, but chiefly from the 1st century BC to the 3rd century AD. The nomads were the first occupants of the site; they were descendants of the Sacians who lived north of the country, ‘beyond Sogda’. In the 5th to 8th century a mighty wall was built around the citadel of the earthwork. There are still traces of occupation of the site up to the 14th century AD. Then, only a small fortress was in existence in the 18–19th century, which was inhabited till the present. The author also describes architectural relics of the site.

Uzbekistan

Uzbekistan is a relatively narrow and irregular strip of land extending over a distance of about 1500 km., from Fergana and the Tian-Shan Mountains in the east to the desert country beyond the western coast of the Aral Sea. Only in two points is it nearly 400 km. wide, but in the east, in the mountains its narrow districts, interlaced with those of Kirgistan north of them and of Tadzhikistan in the south, are in a few points linked to each other by short 30–20 km. wide ‘passages’. We shall start our review with the literature dealing with Fergana and other eastern regions, and gradually advance westwards.

First general issues. To these belongs the 8th issue of *IMKU* (Tashkent 1969, 208 pages, editor B. V. Lunin), which is a *Festschrift* dedicated to I. G. Gulamov on his 60th birthday. It contains 26 contributions by 26 authors which deal with the past of Uzbekistan from the Palaeolithic to the 20th century AD. Only 3 of these papers are devoted to the Bronze Age and Early Iron Age. The book has been reviewed by G. V. Grigoreva and V. I. Raspopova (*SA* 1971–4: 256–258) who also give a short summary of each contribution. Mention should also be made to the article by Ia. G. Gulamov and A. R. Mukhamedzhanov (*ONU* 11, 1967: 44–51) on the achievements of Soviet archaeology in Uzbekistan and also on the earliest investigators of the country since the end of the 18th century. The authors characterise their archaeological activities and point to their achievements. A similar review of archaeological works in Uzbekistan during the Soviet period has been published by A. R. Mukhamedzhanov (*SA* 1967–4: 93–102), the co-author of the article mentioned above. The report by K. Kachuris (*AO* 1966: 335 f.) also deserves mention: he reports on the investigation of Elken-Depe, the largest fortress of North Parthia. It embraced 12 hectares encircled by strong walls. Its centre was a citadel situated on a height up to 20 m. above the level of the town. Excavation revealed 5

periods in the history of the construction of the centre. The earliest yielded pottery of the Namazga VI type, of the mid-second millennium BC, and the upper, the latest layer was of the 6th–5th century BC. The book *Drevnyaya Baktria. Predvaritelnye soobshcheniya ob arkheologicheskikh rabotakh na yuge Uzbekistana* (*Ancient Bactria Preliminary Reports on Archaeological Works in the South of Uzbekistan*, Leningrad 1974) was not available in London. Its review by G. A. Koshelenko appeared in *VDI* (1975–2: 148–153).

The article by N. G. Gorbunova (*ASE* 5, 1962: 91–122) is of a rather general character, dealing with the Early Iron Age culture of Fergana, (the 6th to 3rd centuries BC), called the Eylatan period, which followed the Chust period. The Eylatan culture extended only over Eastern Fergana and differed in many respects from the culture typical of other regions of Central Asia, although common features link it with neighbouring cultures in Fergana. These questions have been discussed by the author in this article but also in an earlier one already quoted previously (p. 85). Three other articles by N. G. Gorbunova are devoted to some specific questions. In one (*SA* 1970–1: 77–86) she distinguishes a few different kinds of pottery in the early centuries of the Christian Era in various regions of Fergana and thinks that this was due to the influx in the country of the new ethnic elements. In another article (*KSIAM* 122, 1970: 81–85) she discusses the date of the pottery covered with a thin layer of red shiny clay; it was current in the period from the 2nd to 6th centuries AD. And the last of the 3 articles (*ASE* 13, 1971: 73–93) is again devoted to the pottery mentioned above, the date of which has been established by the author at 1st to 4th centuries AD.

Iu. A. Zadneprovskii (*SA* 1959–3: 216–219) briefly describes a settlement of the Chust culture in North Fergana at Asakal-Tepe, that ceased to exist in the 7th century BC, and in another article (*SA* 1960–3: 29–45) he described investigations of the earthwork of Eylatan in northern Fergana, which gave the name to the culture represented by its remains. The culture developed from the 7th to 4th centuries BC, and the author attributes it to the Paricanians (*Herodotus* III, 94; VI, 68, 86). In the work *Drevnezemle-delcheskaya kultura Fergany* (*The Ancient Agricultural Culture of Fergana*, *MIA* 118, 1962, 328 pages, 78 plates), Iu. A. Zadneprovskii briefly describes the Bronze Age Chust culture, as already quoted by me in *Bulletin* 7: 82, and then the subsequent culture of the country the Eylatan culture of the Early Iron Age. He discusses the general conditions in Fergana at that period, the date, economy, metallurgy, anthropological change, etc.

New discoveries in northern Fergana have been reported by Iu. G. Chulanov (*SA* 1967–2: 245–250). They were found at 7 points along the river Gava-Say, and consisted of traces of settlements and graves, all of the first centuries AD. A Late Bronze Age cemetery in central Fergana, called Arsifskie, was reported by Iu. Iu. Piotrovskii (*AO* 1972: 464 f.); out of 29 'ograde' type graves, 19 were excavated. E. Kadyrov (*AO* 1972: 461) reports on his investigation of a cemetery of the period from the 2nd century BC to the 2nd century AD situated near the highway Sokh-Khaydarken, 17 km. east of the Sokh-canal. Thirty burials were excavated. V. I. Kozenkova (*SA* 1966–1: 211–226) describes a few cemeteries with stone-built mounds over the graves but with no

'catacomb' graves. Among these were the cemeteries Markhamatskii in Andizhan oblast, the Yangiabadskii and Tash-Kurgan both in the Fergana oblast. The last one of these has been described in detail. Tash-Kurgan lies 16 km. south of the town of Fergana, on the right bank of the Margelan-Say, and the cemetery consisted of 44 mounds, 20 of which were excavated. They were of the 1st to 4th centuries AD. The mounds and grave goods, pottery in particular, were described by the author.

Traces of mining of high quality silver ores in the Kuraminskii Ridge, east of Tashkent, have been reported by Iu. F. Buriakov (*SA* 1965-1: 282-289). One of the main points was at Lashkerek and other sites on the upper reaches of the Angren and its tributary streams. Shafts up to 400 m. deep were found there and a great mass of sludge which implies that ores were processed locally. It has been estimated that about 14,000 tons of ore had been mined. A number of settlements connected with mines were also recorded. The main period of mining in this area lasted from the 7th to 10th centuries AD but in some sites works had proceeded up to the 12th century AD.

According to B. A. Litvinskii (*SA* 1967-2: 20-37), in the area of Yangi-Iul, 25 km south-west of Tashkent, a burial field with some 1000 barrow graves has been recorded, 13 of which were excavated by the author in 1937-1939; it extended along the right side of the river Dzhun. Archaeological material from the graves implies that they dated from various periods between the 1st century BC to the 3rd century AD, and that they may be attributed to the Kangiuy people. According to written sources, the Kangiuy state was very mighty at the time between the 2nd century BC and the 5th century AD.

Two reports by Iu. A. Zadneprovskii (*AO* 1969: 405 f.; 1970: 412 f.) briefly relate the results of excavation of the Dalverzin citadel, which the author considers as the central fortress of the Chust tribes during the Bronze Age. It was divided into 3 parts, each with its own defensive wall. Graves of the Late Bronze Age were also found there. On the other hand B. A. Turgunov says that the 2 larger earthworks, the Dalverzin-Tepe and Karabag-Tepe lay in the centre of the ancient Central Asiatic Chaganian principedom extending over the area on the upper and lower course of the Syr-Daria. The Karabag-Tepe was built in the 3rd-2nd century BC and must have ceased to be inhabited by the end of the 4th century AD. Dalverzin-Tepe was built in the 3rd-2nd century BC and its upper layer is of the 5th to 7th centuries AD.

The book *Istoriya Samarkanda s dreneyshikh vremen do Velikoy Oktyabrskoy Sotsyalisticheskoy Revolyutsii* (*History of Samarkand from the Earliest Times to the Great October Socialist Revolution*. Vol. I, Tashkent 1969, 484 pages) was published to celebrate the 2500 years of the existence of Samarkand. It was not available in London: its review by Iu. A. Zadneprovskii appeared in *SA* (1973-1: 303-304). Another book (small in size) on the same theme is *Afrasiab* (Tashkent 1969, 332 pages), editor Iu. G. Gulyamov. It contains 12 articles by 13 authors. This is a report of the Afrasiab Archaeological Expedition. The earthwork Afrasiab was the earliest foundation of Samarkand, which lay in ancient Sogdiana. The earliest settlement was set up by the end of the 6th century BC. Several periods in its later development have been distinguished by A. I. Terenozhkin, based on archaeological evidence. Its 'table' pottery of the 2nd

century BC to the 1st century AD was very similar to Greek pottery of the 5th to 1st centuries BC. Its upper layer was of the 12th to 13th centuries AD.

Several articles have been devoted to various topics connected with Afrasiab. Thus G. V. Shishkina (*SA* 1975-2: 60-78), in a special study of the Hellenistic pottery from the site, distinguishes 3 of its complexes, each characteristic of 1 of the 3 subsequent periods in the development of the earthwork. The second of these was of the Scythian period, the 5th to 3rd centuries BC. The same author in another article (*SA* 1969-1: 62-75) deliberates on the site of the ancient town of Marakanda. She points out that the results of investigation of the ancient town Samarkand-Afrasiab imply that Marakanda, a large and well fortified town according to historical records, and an important political and economic centre, must have been placed at the site of Samarkand. It was in existence there before Alexander the Great's invasion of Central Asia in the 4th century BC. Two periods in the development of Marakanda have been distinguished, one lasting over the 5th-4th centuries BC and the other over the 2nd-3rd centuries AD. L. V. Pyankov (*VDI* 1970-1: 32-49) points out that Marakanda has been known from the historical records (the earliest of 329-328 BC) and from the archaeological evidence. It was in existence in the Achaemenid period. In the early records it appears under the name 'Marakandy'. A description follows of the remains of the city and of its surrounding country.

The chronology of the fortress Afrasiab has been discussed by S. K. Kabanov and A. I. Terenozhkin, both based on the stratigraphic evidence of the site. In the first of these, S. K. Kabanov (*SA* 1969-1: 183-198) distinguished 4 periods in the history of the site: 1) 6-4 centuries BC, the Soghdian period; 2) the 3rd to 1st centuries BC, the Soghdiano-Hellenistic period; 3) the 1st to 4th centuries AD, the Kushan period; and 4) the 5th-7th centuries AD, the late Soghdian period. The city of Marakanda, ravaged by Alexander the Great in the 4th century BC, was soon rebuilt and fortified. A. I. Terenozhkin (*SA* 1972-3: 90-99) says that the new chronology of ancient Samarkand has been based on the chronology of Scythian type arrow-heads found in various layers of the site. He also briefly discusses the known facts of the country's history of that time.

Two reports may be mentioned on excavations in the region of Samarkand. Thus A. Askerav (*KSIAM* 122, 1970: 64-66) reports on the results of investigations of a Bronze Age cemetery at Muninabad of the Andronovo culture. Bronze and gold personal ornaments found there point to the wealth of the people buried there; anthropological study indicates its genetic connection with the ancient population of Central Asia: their skulls differ from those of the Andronovo people in the countries further north, in spite of the fact that material culture of the people buried in the cemetery was Andronovian. B. Ia. Staviskii (*SA* 1967-2: 22-28) deliberates on the date of the early layers at Taly-Barzu, about 6 km. south of Samarkand. A graph on p. 27 shows the dates of the 4 superimposed layers of the site, as proposed by 5 different scholars, including the author of the article. They oscillate between about 200 BC, the initial date of the site, and the 5th-6th centuries AD the final date of the ancient settlement.

L. I. Albaum (*IMKU* 8, 1969: 69-79) discusses the date of the upper layer of the settlement Kuchuk-Tepe in ancient Bactria south of the Amu-Daria, on the Muzrabad

steppe some 70 km. north-west of Termez, at the foot of Kugitongtau. Dwellings of the 9th–7th centuries (of the Bronze Age) have been uncovered. The upper layers were greatly disturbed, and only potsherds, found in the ruined layer, imply that there was a second period in the occupation of the site, which fell into the Achaemenid time, the 6th–5th centuries BC. Pottery was mainly wheel-turned. The excavation and the material excavated were described by the author and the position of the site among other similar sites of the period discussed. G. A. Pugachenkova (*AO* 1969: 408 f.) briefly reported on her excavation and survey of the Bactriano-Kushan remains found on the Surchan-Daria, of the Greco-Bactrian period, 3rd–2nd centuries BC, and then of the Kushan period up to the end of the 4th–5th centuries AD and describes the relics investigated.

V. M. Masson (*AO* 1973: 484–486) reports the discovery of the Late Bronze Age and Early Iron Age earthwork, called Dzarkutan, in the Shirabad oasis, the largest earthwork in the south of Uzbekistan known so far. Also recorded were a series of small earthworks of the 2nd to 1st centuries BC which represent typical rural settlements of the Kushan period, scattered around the large one mentioned above. The large ancient irrigation network of the same period was also investigated. One of the small settlements, All-Kurgan, that lay 13 km. south-west of Shirabad in Northern Bactria was excavated by Sh.R. Pidaev (*SA* 1976–1: 186–196). It was of the Kushan-Sogdian period, from the 1st century BC to the 4th century AD. Kushan coins and in its upper occupation horizon a Buddhist figurine were found.

The book *Drevnyaya Baktria. Predvaritelnye soobshcheniya ob arkheologicheskikh rabotakh na yuge Uzbekistana* (*Ancient Bactria. Preliminary Reports on Archaeological Works in The South of Uzbekistan*. Leningrad 1974) was not available in London. It has been reviewed by G. A. Koshelenko (*VDI* 1975–2: 148–153); a large portion of the review was devoted to the article by V. M. Masson.

Special attention has been paid to the remains at Old Termez, where the ruins of an ancient Buddhist religious centre, Kara-Tepe, has been thoroughly investigated during the period 1965–71. Reports on the results of excavation of the Centre contained in the book *Buddiyskie peshchery Kara-tepe v Starom Termeze. Osnovnye itogi rabot 1963–1964 gg. Nadpisi, terrakoty, kamennye reliefs* (*Buddhist Caves Kara-Tepe in Old Termez. The principal results of the works 1963–1964. Inscriptions, terracottae, stone reliefs*. Moscow 1969, 185 pages, 45 illustrations). It consists of 7 articles by 5 authors. In the first of these B. Ia. Staviskii describes the results of excavation of the site; all other articles are mainly devoted to the discussion and appreciation of the excavated objects mentioned in the subtitle. It has been established (the article by I. Harmatta) that in about AD 225 the Buddhist monastery has been replaced by a Zoroastrian temple, at the time at which the Sacian period began. The book was reviewed in *SA* (1971–4: 268–269) by A. M. Mandelshtam.

A more recent publication (a paperback) of the results of excavation of the same site is *Buddiyskii kulturovyy centr Kara-tepe v Starom Termeze* (*The Ancient Buddhist Cult Centre Kara-Tepe in Old Termez*, Moscow 1972, 208 pages, 30 half-tone plates, 30 figures in text, with a summary in English), editor B. Staviskii. It contains 11

contributions by 12 authors, dealing with various aspects of history of the site, of the cults, of its archaeological remains and their date, coins, anthropological questions, etc. This Buddhist cave centre was in existence during the Kushan period, the 2nd to 4th centuries AD. An earlier large report on investigation of the site was *Materialy sovместnoy arkheologicheskoy ekspeditsii na Kara-Tepe (Materials of the Joint Archaeological Expedition to Kara-Tepe*. Moscow 1964, 110 pages, 48 illustrations; with contributions by 3 authors), editor B. Ia. Staviskii. A few brief reports dealing with the site were also published by the latter scholar (*AO* 1966: 311 f.; 1967: 377 f.; 1969: 337 f.; 1970: 417–419; 1971: 517–519; 1972: 470 f.; 1973: 491 f. jointly with 4 collaborators; 1974: 512 f. jointly with 3 collaborators).

O. V. Obelchenko (*IMKU* 2, 1961: 97–116) describes the results of his excavation of 10 barrow graves at Lyavandak, 17 km. south-east of Kuju-Mazar, a station of the Ashkhabad railway, and about 3 km. south of the earthwork of Lyavandak. The mounds excavated were chosen from 5 groups of barrows situated on the border of the Karnabchul steppe. In all, 130 mounds were accounted for in this area. Pottery, rings (one with a tamga incised on it), earrings, a gold medallion, etc., were among grave goods. Both the burial ritual and the equipment of graves point to the initial date of the cemetery as the 2nd century BC. The people buried there were evidently newcomers in the country from the north, from Kazakhstan, and imply the conquest of the country by the Sarmatians. Other reports by the same author were published in *IMKU* (3, 1962: 57–70; 4, 1963: 57–63; 7, 1969: 66–81).

The results of investigation of ancient remains in the delta of Amu-Daria, in ancient Chorasmia, have been published in many works and articles by S. P. Tolstov and his collaborators. Here, we have to register only a few reports on recent investigations in that country. Thus S. P. Tolstov (*AO* 1969: 339) writes on his excavation in that area, but gives no particulars as regards the sites investigated. A very short report has also been given by Iu. Rappoport (*AO* 1969: 401 f.) in his work at Toprak-Kaia, of a palace of the Chorasmian period, the 3rd century AD. Results of excavation of the same earthwork of the 4th to 2nd centuries BC were also reported by M. Mambetullaev and N. Iusunov (*AO* 1973: 483), who have also discovered relics of a potter's settlement at Karatash, on the bank of the Amu-Daria in the region of Khumbuz-Tepe. It extended over an area of 4 hectares, and was in existence during the period from the 4th century BC to the 2nd century AD.

It may be mentioned in this context that according to L. V. Pyankov (*VDI* 1972–3: 3–21), the area of ancient Chorasmia, as indicated by the study of data taken from the works by Hecateus of Miletus, lay south of that called Chorasmia today, and extended up to Ashkhadad in modern Turkmenia.

Two contributions relate to the westernmost part of the Amu-Daria delta, in the Karakalpak ASSR (a part of Uzbekistan). One of these is the book by A. V. Gudkova, *Tok-Kala* (Tashkent 1964. 152 pages, 17 half-tone plates), a site investigated first by the Khoresmian Expedition. It lay on a height called Toktail, 14 km. north-west from the town of Nukus. Tok-Kala settlement was set up in the 4th–3rd centuries BC and lasted

till about the 11th century AD. Several superimposed occupation layers have been distinguished, and the history of the site, its connections with the history and economy of the whole country discussed by the author. The other book is *Koy-Krylgan-Kala. Pamyatnik kultury drevnego Khorezma IV v.do n.e. – IV v.n.e. (Koy-Krylgan-Kala. A Relic of the Culture of Ancient Chorasmia 4th century BC – 4th century AD. 348 pages, including 34 plates, Moscow 1967, TKhAEE vol. V) by 8 authors, editors S. P. Tolstov and B. I. Vainberg.*

Turkmenia

A survey of archaeological works in 1966 in Turkmenia of ancient relics up to the 14th century AD, was given by E. Atagariev and O. Berdyev (*SA* 1967–3: 124–142). The work *Pamyatniki Turkmenistana (Relics of Turkmenistan. Ashkhabad 1966, 42 pages)* contains contributions by a number of authors. It was reviewed by B. V. Lunin (*SA* 1969–1: 298–300).

A review of excavation of ancient sites in Turkmenia has been given by L. I. Khlopina (*SA* 1972–3: 377–381), who also reported those in *IANTu* (Seriya Obshchestvennykh Nauk, for 1962–1970). Another article of a general character is that by E. E. Kuzmina (*VDI* 1972–1: 131–147) on the problem of the formation of the culture of Northern Bactria. She discusses its early stages and mentions that Bactria was an independent country in the 8th century BC. On p.133 a chronological table is given showing the subsequent periods in the history of the country and their relevant cultures, and in distinguishing the sequence of the agricultural and pastoral cultures separately.

A. O. Vishnevskaya (*AO* 1971: 533 f.) reports the results of excavation of the central part of the earthwork of Kyuzeli-Gyr. A large amount of the wheel-turned Khoresmian pottery, but little of the hand-made ware was found. The three-edged socketed bronze arrowheads of the 6th–5th century BC and a few other metal articles found there served as indicators of the date of the relics. A few large rooms and 3 dungeons were uncovered. The site lay south-west of the Aral Sea, west of the Amu-Daria delta. In a later report (*AO* 1974: 522 f.) the same author gives a brief account on the results of excavation of the earthwork of Dzhigerbent, situated on the left bank of the Amu-Daria, in the zone of the construction of the Tyuyamyanskii water reservoir in the district of Darganata. The earthwork was almost entirely eroded by the Amu-Daria, only a part of the medieval citadel remained. Some meagre structural traces and a lot of potsherds were all that remained from the earlier settlement of the site: they were of the 4th to 2nd centuries BC.

G. N. Lisitsyna and L. V. Prishchepenko (*KSIAM* 132, 1972: 3–11) discuss the Tilki-Depe site and some problems of south-west Turkmenia, ancient Dakhistan during the late Bronze Age (Namazga VI period, the end of the 2nd millennium BC and the early 1st millennium BC) and the Early Iron Age. The settlement of that time was discussed, as were the climatic conditions in the country at that period; an ancient irrigation channel and irrigation network was also described.

Several reports on investigation and excavations in North Turkmenia, in the area west of the lower Amu-Daria, were published by B. Vainberg (*AO* 1970: 434–436, with two associates; 1971: 530–532; 1972: 475–477; 1974: 518 f.). First the region of the Sarykamyskaya depression and the dry bed of the ancient Uzboi river were investigated. The settlement Kuyusay 2 of the 7th–6th centuries BC situated on one of the oldest Uzboi beds, on the border of the sands Zaunguzskie Karakumy was excavated. A series of settlements of the 5th century BC, and later ones of the 4th–5th centuries AD were recorded along a channel south-east of Tyz-Gyr; a cemetery of the 6th–5th centuries BC at Tarym-Kaya and a barrow grave cemetery of the 4th–2nd centuries BC at Dordul on the Uzboi were excavated. In 1971 a large settlement of the Early Iron Age, the 7th–6th centuries BC, was investigated in that area; many traces of copper working, and a large number of a variety of beads and pendants of carnelian, lazurite, turquoise and shells, and pottery were found; pottery was of the Yaz II type. In 1962 a barrow grave cemetery on a height called Tumek-Kichidzhik in the western part of the ancient Amu-Daria delta was investigated. Eighteen graves of these were of the Kuyusay culture of the Early Iron Age, about 10 with ‘catacomb’ or niches; some had collective burials. No metals and weapons were found there. The graves were of the late first millennium BC and the 1st century AD. Traces of an earlier settlement of the 7th–6th century BC were well visible within the limits of the cemetery. In 1974 another barrow grave cemetery of the same Kuyusay culture was investigated in the same region, in the Amu-Daria delta. Out of about 30 mounds 9 were excavated. The graves were mostly of the 4th, but some of the 5th century BC.

A number of barrow graves were excavated on the banks of the Uzboi as reported by O. Babakov (*AO* 1971: 534 f.; 1973: 497 f. both with 2 associates). One of these had a catacomb type of grave of the 4th to 1st centuries BC. In the same region a fort situated on the Uzboi bank, called Igdy-Kola was investigated by digging a trench across it. Investigations revealed that Zoroastrianism had permeated into that region. Kh. Iusunov and Dzh. Durdyev (*AO* 1972: 486) announce that they excavated a few poorly furnished barrow graves at Bekibent and at the foot of the Begarslan Mountain both in the region on the upper Uzboi. They were of the end of the first millennium BC and the beginning of the first millennium AD.

In the region on the northern limit of the Zaunguskie Karakumy the settlement called Kuyusay 2 (7th century BC) was investigated by B. I. Vainberg (*AO* 1971: 530–532). It extended over an area of c. 15 hectares. Besides the hand-made pottery, wheel-turned ware of the Yaz II type was also found there, together with a few bronze articles and arrowheads.

According to VI. Sarianidi (*SA* 1976–1: 42–68) investigations were undertaken of the south-eastern part of the Karakum sands, the area of the ancient country of Margush, ancient (at present dry) delta of the Murgab. In many points there were found numerous objects of the Bronze Age, hitherto unknown in that area. Of interest were seals, the analogies to which may be found in the Namazga IV remains of the end of the 2nd millennium BC. The people of the area were emigrants from the south-east of the

Kopetdag submontane region on the Iranian border.

Two reports by A. Ia. Shchetenko (*AO* 1971: 529 f.; 1972: 485) relate to the results of excavation of the settlement Tekken-Depe situated about 2 km. south of the well known site Namazga-Depe, 4 km. north-west from railway station Kaakhka. Four construction periods have been established of the settlement which extended over an area of 2 hectares. Pottery was similar to that of Namazga VI period, of the late Bronze and Early Iron Age. A few graves were also uncovered there. A brief report on excavation of a settlement in the same region, at Gosha-Depe, 18 km. north of Kaakhka, was given by G. Gutlyev (*AO* 1973: 504); 3 occupation layers have been found, the upper one of the Achaemenid period, next of the Yaz I period, and the lowest of Anau IA time. In an earlier report, the same author (*AO* 1971: 532 f.) gives account of investigation of the settlement of Iasy-Depe. It had 3 superimposed occupation layers: the upper one of the Yaz-Depe III period, of the Achaemenid period; at a depth of 2 m. began the layer of the Yaz-Depe type, with a wheel-turned pottery, but occasionally also painted ware and hand-made ware. The layer reached the depth of nearly 7 m. A fuller report on the results of excavation of the Iasy-Depe site had been published by I. Gutlyev 1 year before the report mentioned above, in *Karakumskie drevnosti*, Issue 3, (Ashkhabad 1970: 64–71), reviewed by I. N. Khlopin (*SA* 1973–1: 307–310).

Finally, 3 reports on investigations in South Turkmenia. In the earliest of these, G. A. Pugacheva (*VDI* 1969–1: 161–171) describes broken pieces of an ivory throne found in the 'Square House' in Old Nisa, a Parthian fortress 18 km. south-west of Ashkhabad. Their stylistical analysis implies that this was a combined work Achaemenid-Hellenistic, and the author suggests that it must have belonged to Mithridates I. Next is the report by V. N. Pilipko (*AO* 1971: 535 f.) with a description of discoveries at Garry-Kyariz dated to the Parthian period. Three occupation horizons have been distinguished. In the third one a hoard consisting of 49 silver Parthian coins of the 2nd century BC and one gold Graeco-Bactrian tetradrachm were found. In the third report N. N. Vakturskaya jointly with 2 associates (*AO* 1972: 477 f.) reports on excavation of a fortress called Kapras situated on the left bank of the Amu-Daria, south-east of Tyuya-Muyun. Remains of 12 dungeons built in the 4th–3rd centuries BC were uncovered. The fortress was later considerably enlarged, and most of the text is devoted to this later period of the site.

The present state of research at the Citadel of Mycenae*

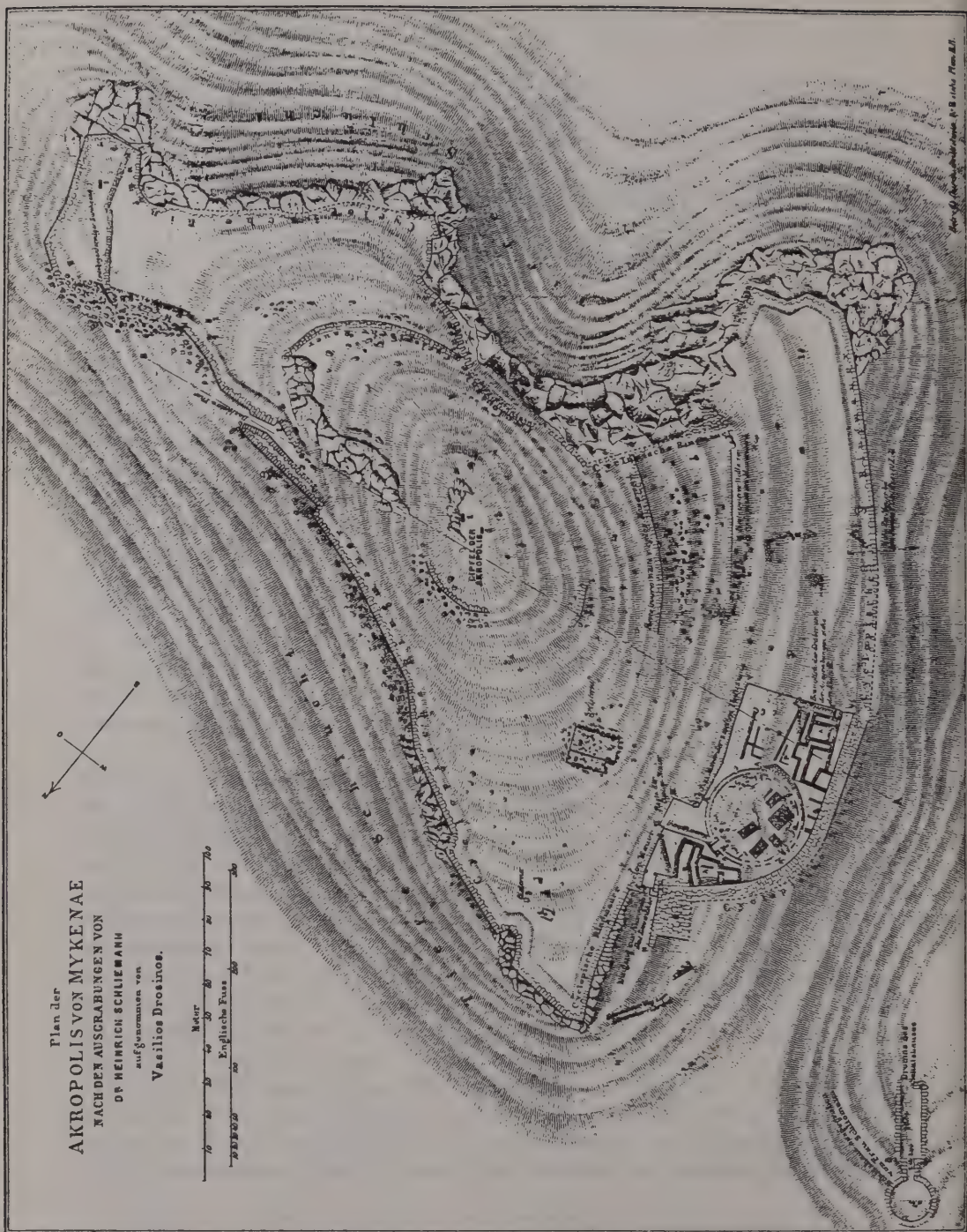
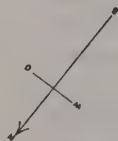
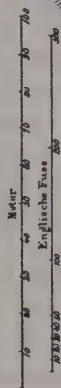
by S. IAKOVIDIS

The great work, as Schliemann would call it later, of unearthing the citadel at Mycenae, began as early as 1841, when Kyriakos Pittakis, Ephor General of Antiquities of the newly founded Greek State, was entrusted by the Archaeological Society at Athens with the task of freeing the Lion Gate from the fill which, over the centuries, had accumulated on both sides of it, burying it up to the lintel (Pittakis, 1841). Pittakis' excavation, however, was an act of piety rather than a scientific undertaking. It is a matter of common knowledge that the first to start systematic research on the site was Heinrich Schliemann (Fig. 1). In 1874 he dug 34 small trial pits all over the hill (Schliemann, 1880: 68). Two years later he discovered the Grave Circle near the Lion Gate and excavated 5 graves and 3 adjacent buildings which he believed to be part of Agamemnon's palace (Schliemann, 1880: 69). He knew of course that his work was merely the beginning of a gigantic enterprise, but neither he nor any of his contemporaries realised at the time that a whole century later new and sometimes fundamental discoveries would still be made on the site.

Research went on practically without interruption. In 1887 Stamatakis dug the 6th grave of the Circle and from 1880 to 1902 Tsountas, again on behalf of the Archaeological Society, excavated the best part of the surface of the hill (Tsountas, 1887; 1888; 1893, 12–29, 35ff). He uncovered the foundations of the Hellenistic and the archaic temples on the summit and brought to light the palace underneath them, cleared several Mycenaean and Hellenistic buildings on the slopes, among these the house that was later christened after him by Wace (Wace, 1949: 66), and excavated the extreme east end of the enceinte and the underground cistern which belongs to it (Fig. 2) (Tsountas, 1893: 19; Karo, 1934). He was the first to see the citadel as a functionally conceived and carefully planned entity, but unfortunately left most of his finds unpublished. He investigated the 6 tholos tombs which were already known, discovered 3 more and excavated many chamber tombs in the hills around Mycenae (Tsountas 1889; 1893: 129ff, 134ff; 1896b). A few years later, in 1913, Keramopoullos scraped down to bedrock what little remained of the fill in the Grave Circle that had been left untouched by Schliemann and Stamatakis and published the pottery he found (Keramopoullos, 1918).

* This is the text of a public lecture delivered at a meeting jointly organised by the Institute of Archaeology, the Institute of Classical Studies and the British School at Athens on 4 May 1976.

Plan der
AKROPOLIS VON MYKENAE
NACH DEN AUSGRABUNGEN VON
DR HEINRICH SCHLIEMANN
aufgenommen von
Vasilios Drosinos.



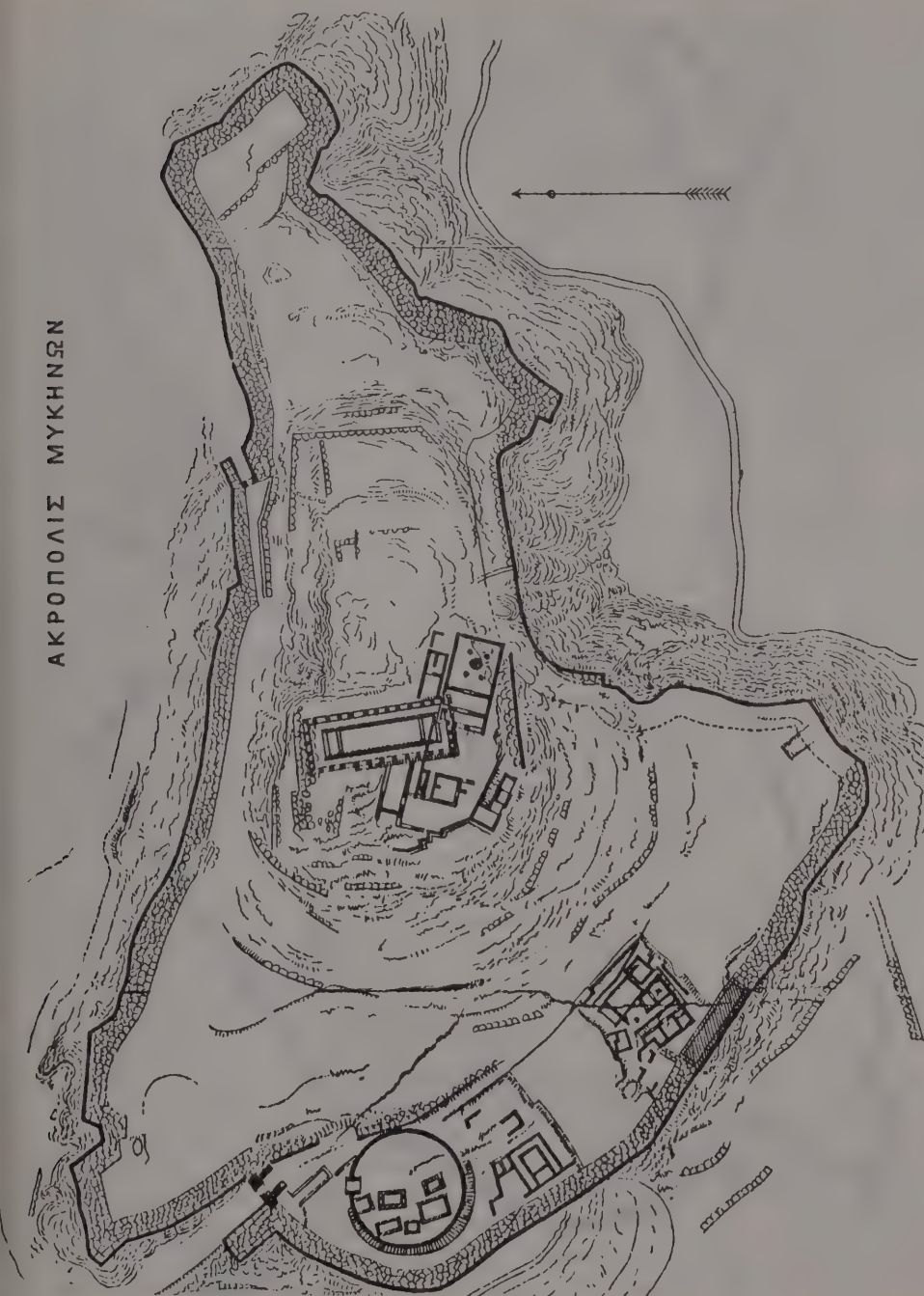


Fig. 2 The citadel at Mycenae after Tsountas (*Praktika* 1886, Pl. 4)



Fig. 3 The citadel at Mycenae after Wace (*Mycenae Guide* 1971, Plate C)

He was followed from 1921 to 1923 by Alan J. B. Wace, who, assisted by C. W. Blegen and L. B. Holland, made a painstaking investigation of the citadel and of some of the already uncovered buildings (Wace 1921–23: 9ff; 1949: 49ff). In addition to the area within the walls Wace investigated afresh all the tholos tombs (1921–23: 283ff) excavated 2 main groups of chamber tombs (1932) and the MH–LH II cemetery between the 2 Royal Grave Circles (1950: 203ff), and brought to light several buildings (mostly houses) in the vicinity of the citadel (1953: 3ff; 1954: 231ff; 1955: 175ff; 1956: 103ff; 1957: 193ff; see also 1949: 26–59). His work, carried out in a manner which set an example for his colleagues then and later and was methodically published, added a great deal of important information to what was known of Mycenae and for long formed the basis of our knowledge about Mycenaean and, generally speaking, Aegean culture and chronology. He took up his research again in 1939 and 1950 and his work on the West Slope was carried on till 1969 by Lord William Taylour (Fig. 3) (Hood, 1960: 9; Megaw, 1963: 12–15; 1965: 10–11; 1967, 8–9; Fraser, 1969: 11–13; 1970: 11–13; Taylour, 1961; 1962; Wardle, 1969).

In 1949 Wace published his book *Mycenae, An Architectural History and Guide*. His description of the site presented the facts known in 1939 and the author's views were based on his observations and on the conceptions then prevailing. Written by the expert *par excellence* after years of studying and carefully weighing all the available evidence, the book gave a precise and coherent account of the state of knowledge at the time, together with the author's personal contribution to the study of the citadel and the area of Mycenae, and of Mycenaean civilisation in general.

Wace believed that the hill had already been fortified in the MH period. He assumed the existence of a modest palace on the summit encircled by a circuit wall, the so-called Original Citadel (Wace, 1949: 62, 69, 84, 86, Fig. 18). This early stronghold, enlarged and strengthened from time to time, was used till the second half of the 14th century BC. Then, c. 1350–1330 BC, a vast palace complex, founded on massive terraces, was constructed according to a grandiose overall plan and a new, extremely strong defensive wall with 2 gates was built around the foot of the hill (Wace, 1949: 50f, 132f). The fortification enclosed the royal shaft graves, which were surrounded by a semi-circular retaining wall to the West, forming a grave circle. This was filled up, encircled by a parapet of shellstone slabs and set apart for the worship of the royal dead (Wace, 1949: 62). Later, during the 13th century BC, the palace was again enlarged and partly remodelled, and the citadel was extended to the East. The palace buildings (Fig. 4), which covered the entire surface of the hilltop, were divided by 2 corridors, parallel to each other, into 3 wings. Among the scanty remains of the upper 2 wings on the north side Wace recognised a guardroom, a propylon, a probable storeroom and a shrine, and he surmised that the whole area formed the residential quarters of the royal family (Wace, 1949: 79f). The south wing, accessible through a monumental staircase and much better preserved, accommodated the state apartments: a throne room with a vestibule (Wace, 1949: 73), a spacious court and the stately megaron. The vestibule of the throne room was built above the so-called Pillar Basement, which used to be part of the earlier palace

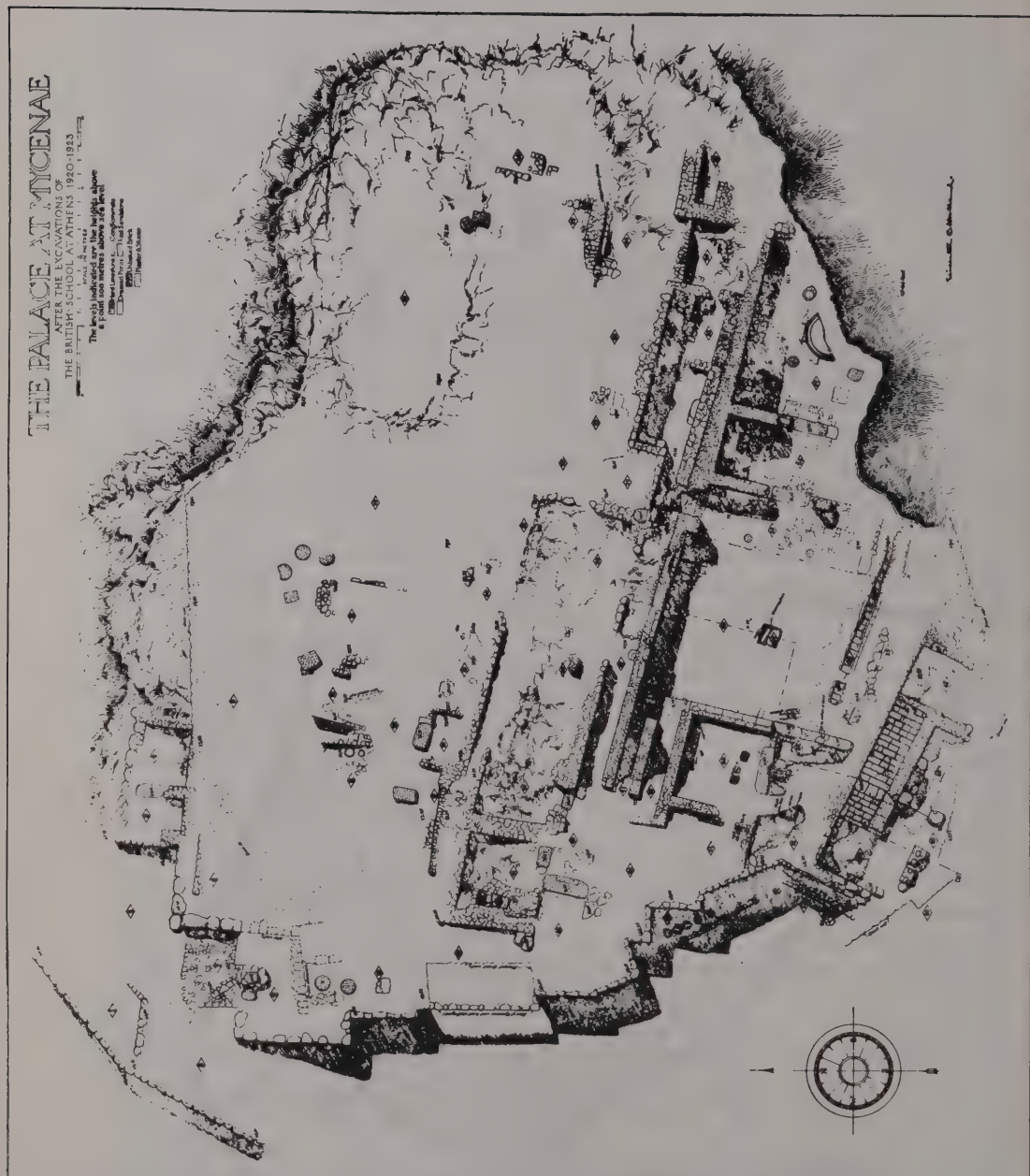


Fig. 4 The palace at Mycenae after Wace (BSA 25, 1921-23, Plate II)

(Wace, 1949: 75). Besides the palace there were in the citadel several buildings, mostly the houses of the attendants of the king. In the western part, around the Grave Circle, were built the so-called Granary (Wace, 1949: 55f), the Ramp House (Wace, 1949: 64f), the House of the Warrior Vase (Wace, 1949: 64f), and the partly excavated South House (Wace, 1949: 66). Further to the South lay Tsountas' House, so christened after its excavator, and a number of dwellings built along the south wall. To the North-west were a couple of Mycenaean structures among a jumble of Hellenistic house-walls and to the East the most imposing building of the citadel, second only to the palace, the House of Columns (Wace, 1949: 91ff, Figs. 37, 33). Three openings run through the wall of the North-east extension (Wace, 1949: 98): a narrow sally port with a corbelled roof (see Fig. 9, 1), a broad drain (see Fig. 9, 3) and a subterranean stepped and corbelled gallery leading down to the secret cistern (see Fig. 9, 5).

All these constructions, discovered and mostly excavated by Tsountas, were systematically investigated, published and dated by Wace, who argued as follows: the identity of their architectural styles shows that the Lion Gate and the great tholos tomb, known as the Treasury of Atreus, must be contemporary. On the other hand, the Lion Gate belongs to the same building phase as the cyclopean wall, the Grave Circle, the Great Ramp and the first big palace complex. The pottery which dates the construction of the tholos tomb belongs, according to Wace, to the second half of LH IIIA (Wace, 1921-3: 349; 1949: 120f, 134). Hence, the tomb, the fortress wall, the Lion Gate, and the palace were built *c.* 1350-1330 BC. The Granary and the staircase by the Lion Gate are obviously later than the wall against which they were built, and their earliest pottery belongs in fact to the LH IIIB period, namely to the 13th century BC. Wace placed the construction of the Granary 'before the end of LH IIIA' and its reconstruction 'during LH IIIB' (1949: 57). They continued to be used until well into the next period, LH IIIC, to the end of the 12th century, and were then destroyed by fire and abandoned (Wace, 1921-3: 40ff), as was the palace. Therefore, concluded Wace, the citadel having been built as a whole at one and the same time and having served as the seat of the mighty kings of Mycenae for two and a half centuries, went up in flames around 1100 BC, probably as a result of the Dorian invasion, whereupon the Bronze Age civilisation of Greece collapsed (Wace, 1949: 23). Moreover, the last century or so had been a time of political weakness and cultural decay, as shown by the poor quality and indifferent style of the pottery belonging to the last phase of the Granary.

Accordingly, the citadel at Mycenae, as also the other citadels, was conceived to be mainly a stronghold, a military establishment, the residence of the king and at the same time a fortress and a place of refuge against sudden attacks by barbarians, pirates, or hostile neighbours (Wace, 1949: 103). This view was in perfect agreement with the notion, generally accepted at the time, of Mycenaean civilisation being a straightforward culture of feudally organised warlords and peasants, who were taught by the Minoans the amenities of life and adopted them by and by, without giving up entirely their warlike outlook. Thus Wace.

It was a clear and pertinent presentation of the relevant facts, although some of its



Plate I The cyclopean core of the fortification wall above the Lion Gate and its later conglomerate curtain. The stone packing in the middle is part of the modern underpinning of the restored conglomerate blocks

aspects were even then in obvious need of reappraisal. Then came the work of Mackeprang and, chiefly, of Furumark, who made a fresh and thorough study of Mycenaean pottery and its chronology and divided it into several, more accurately dated periods. Moreover, in 1955, while the wall above and to the north of the Lion Gate was being restored, Professor Mylonas established beyond doubt a fact which Friedrich Adler had noticed as early as 1895 (Schliemann, 1886: xv): the ashlar conglomerate blocks of the facade did not bind with the cyclopean limestone core of the wall, but had all been laid as stretchers, one on top of the other, forming a separate curtain in front of it and leaving a cleft between their inner face and the core (Plate I) (Mylonas, 1966b: 63; 1966d: 24). Therefore they cannot have belonged to its original construction but to a remodelling of it. Moreover, the pottery from the treasury of Atreus, used by Wace to date the fortifications, was found, according to the new classification, to belong to the LH IIIB period (Mylonas, 1956: 167ff; 1961: 197–200; 1966d: 122, n. 7), a whole century later than the accepted date of c. 1330 BC. This induced Mylonas to undertake, on behalf once more of the Archaeological Society, a fresh detailed investigation of the circuit walls and the buildings of the citadel at Mycenae, a task he began in 1958 and is still pursuing. The campaigns from 1958 to 1964 were spent by him and his associates

(Professors Sp. Iakovidis, T. L. Shear, Dr Ione Mylonas-Shear and Mrs R. Papantoniou) in exploring the walls and the gates (Mylonas, 1965b); from 1965 on they have been dedicated to the excavation of the palace and the buildings within the citadel and to the verification of earlier surmises and deductions.

His work led to the gradual emergence of an essentially different overall picture, more complicated but also more detailed and more pertinent than the earlier one, since it not only ensues from the freshly observed and persistently cross-checked excavation evidence, but is also in accordance with the information about the Mycenaean world revealed by excavation elsewhere and by the deciphering of the Linear B tablets.

To resume: the ashlar conglomerate coating of the wall above the north side of the entrance court in front of the Lion Gate did not penetrate into the cyclopean core of this wall. It bonds, however, with the facade of the Gate itself, as do the ashlar blocks of the bastion on the other side of the Gate, which bond with their own limestone core as well as with the west wall to the right of the bastion. It is apparent, therefore, that the conglomerate facing of the north wall, the Lion Gate, its bastion and the west enceinte belong together and are later than the north cyclopean wall, to which they had been added (Mylonas, 1965b: 167ff, esp. 194; 1966d: 33). Further down to the East this north wall is pierced by the so-called Postern Gate, a smaller replica of the Lion Gate, also built with conglomerate blocks (Mylonas, 1965). The jointing of its flanking bastion to the cyclopean wall shows clearly that it is a later addition (Mylonas, 1965b: 28).

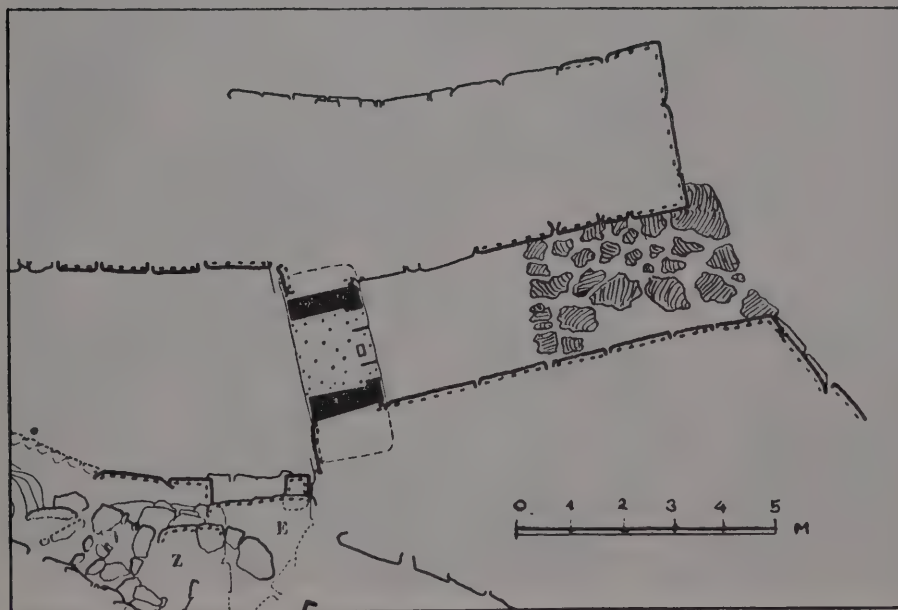


Fig. 5 The Postern Gate (after Mylonas and Iakovidis)

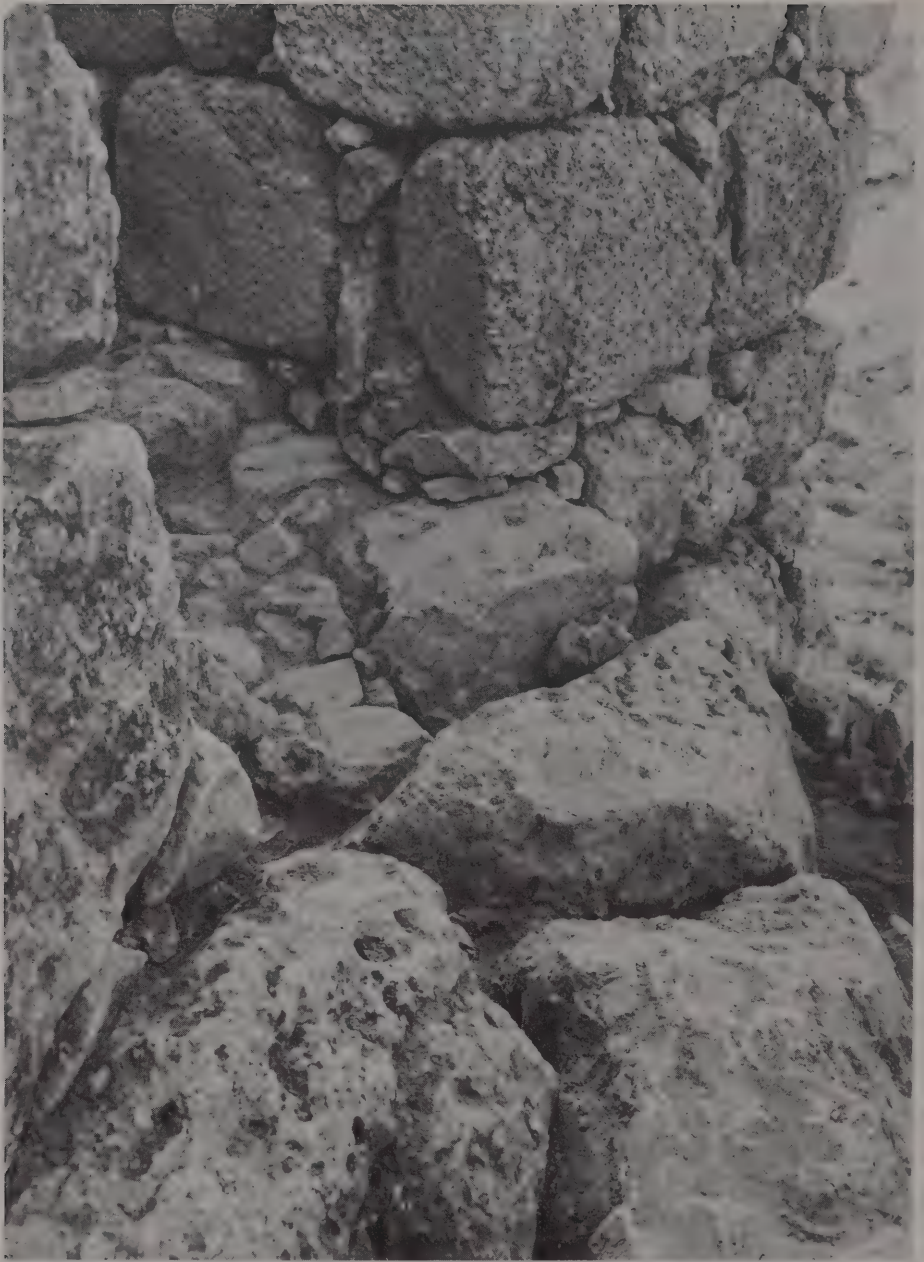


Plate II Foundation layer of original North Wall across the court of the Postern Gate



Plate III Remains of original North Wall jointing with later North-east extension

Moreover, the excavation of its entrance court brought to light a layer of stones lying across the court (Fig. 5), evidently the foundation of the north wall which ran originally on without a break (Plate II) and was cut through at a later date by the builders of the Gate (Mylonas, 1965b: 30ff; Fig. 16, Pl. 9). Thus, Mylonas proved that the Postern Gate is also later than the north circuit wall and its style shows that it must be more or less contemporary with the Lion Gate.

The part of the enceinte known as the North-east extension, built to ensure the water supply of the citadel, is another addition to the original circuit. It was built against the earlier wall without bonding. The joints are clearly apparent, not to mention the fact that at the south end of the addition the lower courses of the earlier wall can be seen for almost 4 m. inside the fortified area (Plate III). This was already known to Tsountas (Tsountas, 1896a: 143f) as well as to Wace (Wace, 1949: 97), but the actual line of the original wall was traced in its entire length only in 1959 (see Fig. 9) and was found to have been curved and not straight, as shown in all previous restorations (Mylonas, 1965b: 5ff, Figs 1, 2). At the same time it was discovered that the so-called Sally Port in the south part of the extension led to a broad terrace built along the outer face of the fortification above the precipitous cliff of the Chavos bank (Mylonas, 1965b: 146ff esp 151; 1966d, 16f), a feature hardly consistent with a defensive arrangement allowing for sallies. On the other hand, the drain on the north side is no drain but a passage, leading outside (Fig. 9, 3), a low, oblique gallery very easy to block up in an emergency (Mylonas, 1965b: 153ff; 1966d: 19).

Tracing the course of the original but subsequently removed south wall proved to be no easy task (Mylonas, 1956; 174ff; 1965b; 172ff). The cyclopean limestone wall above the Lion Gate had not only been faced with conglomerate, it had also been truncated and its eastern continuation entirely demolished. The traces it left, observed in part already by Tsountas (Tsountas, 1893: 109), are few and far between and consist in shallow rock cuttings and in single blocks lying apparently in situ. The only more or less substantial remains appear near the east slope of the hill in the form of a few courses of huge unworked limestone blocks, overlaid by a later, but still Mycenaean, terrace wall (Mylonas, 1965b; 179; 1966d: 25). Taken together, these few remnants indicate a line which follows closely the contour of the rock and corresponds in all probability to the earlier *tracé* (Mylonas, 1965b: 168ff). The point of entrance to it cannot be determined any more with any degree of accuracy. But since the excavation of the Great Ramp — which leads from the Lion Gate towards the palace, climbing from North to South — brought to light another, earlier ascent, leading in the opposite direction (Mylonas, 1965b; 135, Fig. 81; 1966d: 26), it is very likely that the entrance to the first citadel was situated on the slope near and above the spot where the Lion Gate was built afterwards.

The circuit wall was therefore not the result of a single building programme, as Wace had supposed. Evidently, the north wall was earlier than the North-east extension as well as the South-west wall and both gates. It remained to date the building phases. To this end the fill beneath the thresholds of the 2 gates and, at various places, in the stone packing of the core of the wall and the spaces between the joints of the blocks

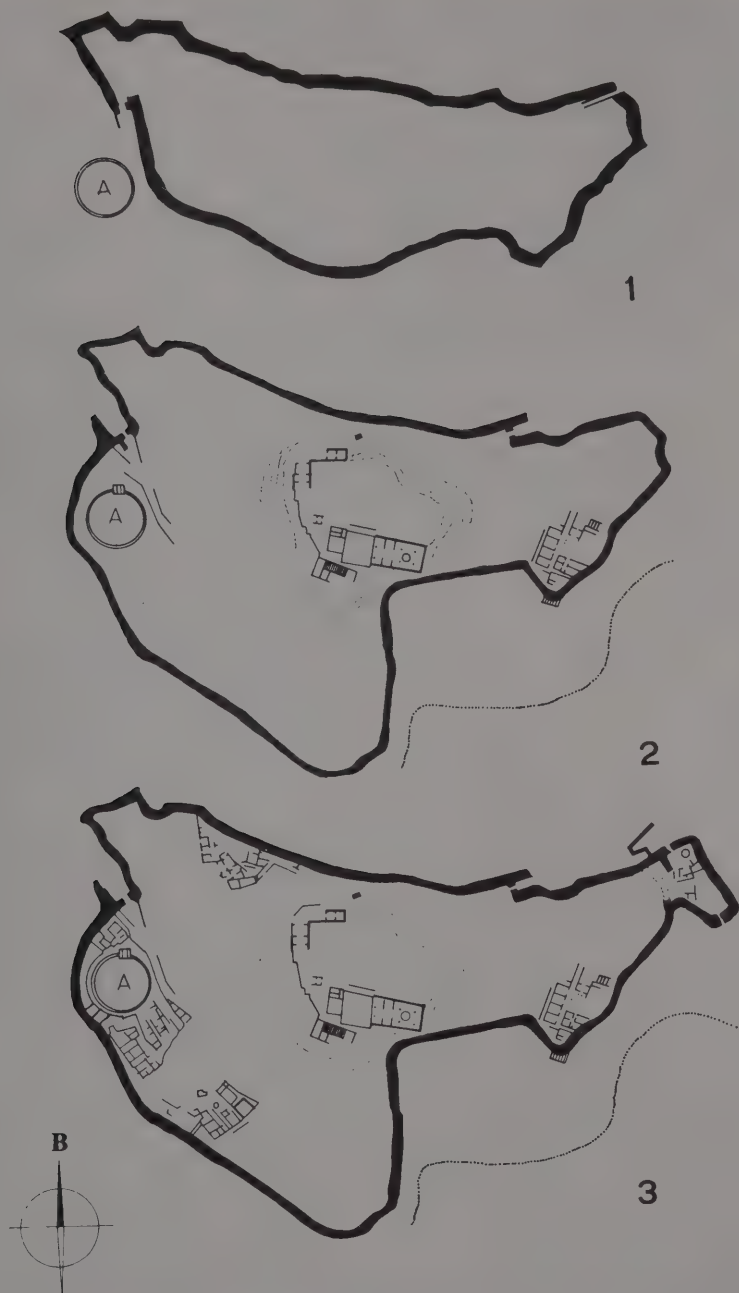


Fig. 6 The phases of development of the fortifications at Mycenae, after Mylonas

of the facade were closely investigated. The pottery thus collected was subjected to a meticulous scrutiny. The comparative study of this material showed beyond doubt that the fortifications were built in 3 successive periods (Fig. 6) (Mylonas, 1965b: 167ff, Fig. 102; 1966d: 33): to the first belong the north wall and part of the south-east wall, built in LH IIIA2, that is, in the middle of the 14th century BC. A hundred years later, in LH IIIB, the south-west part of the enceinte was dismantled and the fortified area considerably extended towards the foot of the hill, whereupon the Lion Gate was erected and the Grave Circle surrounded by the new fortification wall. A few years later the Postern Gate was built and finally, at the end of LH IIIB, *c.* 1200 BC, the north-east extension was added.

The interior of the citadel has also been closely investigated since 1958. First to be excavated was the Great Ramp (Mylonas, 1965b; 129ff). Its fill was removed down to bedrock, showing 4 superimposed levels. The earliest is not a ramp, properly speaking, but a road laid between the abrupt rocky slope of the hill and the Grave Circle, leading from the South-east to the North-west. The second followed the same direction, ascending gently towards the spot where the gate of the first fortress might have been situated. But the third, much steeper, was inclined from the North-west to the South-east, leaving between its outer edge and the Grave Circle a passage 3.50 m. wide. This reversal of the ascent to the upper citadel is conceivable only in connection to the Lion Gate, showing this stage of the Ramp to belong to the second, LH IIIB, building period of the citadel. The fourth ramp, the one still in use, built slightly off the axis of the Lion Gate, is steeper and broader, so much so that the foundation blocks of its retaining wall were at a certain point laid over a couple of slabs of the Grave Circle parapet which had been broken off at the top (Plate IV). The sherds from the fill of this last remodelling date its construction to the last building period, at the end of LH IIIB (Mylonas, 1965b; 138; 1966: 26).

The west retaining wall of the Grave Circle, which supports the slabs of the parapet, is in part built on top of a broad wall (Plate V). Tsountas, the first to discover it, believed it to be part of the earlier enclosure of the Circle (Tsountas, 1893; 107). Wace saw it as a mere foundation of the retaining wall (Wace, 1921-3; 105). The investigation by Mylonas and his associates proved that it is built in the same way as the wall surrounding Grave Circle B outside the citadel, and that the pottery from among its stones belonged exclusively to the last years of the MH period (Mylonas, 1965b; 111f; 1966d: 91, 95). Tsountas was right: the wall formed part of the original royal enclosure at the northern end of the MH cemetery. So the history of the Grave Circle became clear: at around 1550 BC the royal sepulchres were cut into the rock and surrounded by a low enclosure separating them from the other graves. Some 300 years later the retaining wall was built, the precinct was filled in up to the level of the new entrance to the citadel and the parapet of slabs, obviously nothing but a glorified version of the old enclosure, was added. Schliemann's observations, scanty as they are, and the material collected later by Keramopoulos leave no doubt that the fill was thrown in all at once (Mylonas, 1957: 113, 118ff; 1961: 201; 1966d: 96), obliterating all surface indications of individual graves,

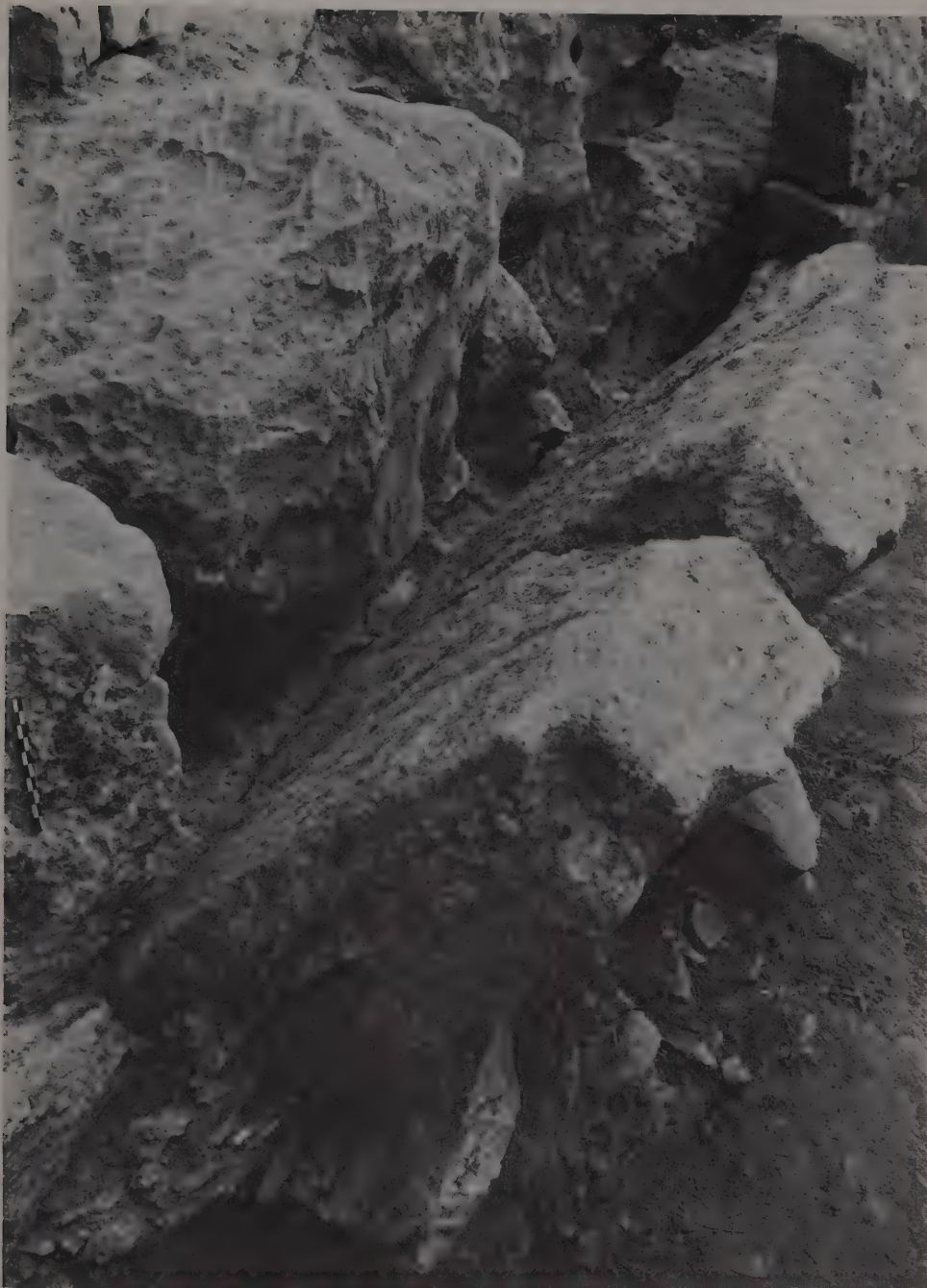


Plate IV Foundation blocks of Great Ramp laid over broken parapet slabs of Grave Circle A



Plate V MH enclosure of Grave Circle A beneath LH IIIB battered retaining wall

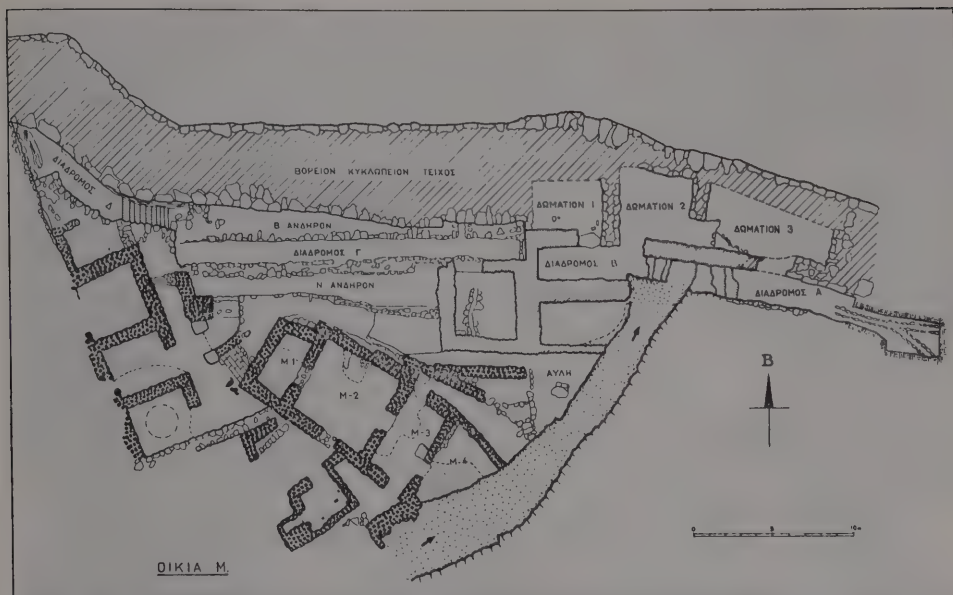


Fig. 7 House M and casemates in the fortification wall after Mylonas (*Praktika* 1963, plan A)

without regard to the position of their stelae or to the need of communicating with the persons buried by libations or any other kind of offerings. At the end of the 13th century BC, when the Ramp was enlarged, the parapet was damaged without compunction. So the evidence shows that the Grave Circle was at no time used as a cult place, and confirms, together with the observations made during the excavation of Grave Circle B, what was already known, namely that no cult of the dead was practised by the Mycenaeans (Mylonas 1966d; 178f; 1973b: 265).

The north-western slope of the hill, between the Lion Gate and the palace, is covered by a medley of walls belonging to a variety of buildings of different periods. They were uncovered by Tsountas and labelled as Hellenistic, which, as a matter of fact, is true for many of them. But the 4 basement rooms of a large rectangular building (House N) right behind the fortification wall above the Lion Gate proved to be late Mycenaean. Further to the East, beside the north wall, Mylonas cleared a terrace, on which stood a megaron-like building, also Mycenaean (Fig 7), christened House M (Mylonas, 1966b: 99ff, Plan A). On its south side it has a double porter's lodge which controls the access to the anterooms of the main apartment. To the North of the building are 3 basement rooms. Three casemates were discovered, built, as in Tiryns, in the thickness of the fortification wall (Mylonas, 1966a: 62, 64). They are later than the wall itself and belong to a remodelling of it, dating, along with the construction of House M, at the end of the 13th century BC. The pottery shows that the whole complex had been in use throughout LH IIIC, till the beginning of the 11th century BC (Mylonas, 1966a:



Plate VI North stairway to palace

64). House M, built in front of the casemates and having its entrances closely guarded, was surely no private residence, but, as likely as not, the quarters of a senior palace official, the fortress commandant perhaps or the quartermaster of the palace.

House M lies at the foot of the stepped terraces which had covered, according to Wace, the Original Citadel of MH times. He had dug into the fill of one of them and uncovered a construction which had produced MH sherds and was accordingly considered to be part of this earlier fortification (Rowe, 1964: 248–253). In 1961, Wace's trench was identified, cleared and enlarged. It became apparent that the construction in question was indeed MH but that it lay obliquely to the terrace, and that it was a house wall and not part of a fortification circuit. It was also proved that the stone packing covering the MH wall and attributed by Wace to his original fortification was much later, the last in a succession of 3 LH cyclopean constructions built to retain the stone fill on which the North entrance to the palace has been founded (Mylonas, 1964: 157f; 1966: 15f).

The final stretch of the road leading from the Lion Gate to the palace passes between House M and the terrace just mentioned, skirting the north wall. Already in 1922 Wace had discovered in the north-west corner of the palace a cross wall between 2 column bases (see Fig 4) which he identified, correctly, with the entrance hall, the propylon, to the palace (Wace, 1921–3: 211ff). But the ascent from the road to the

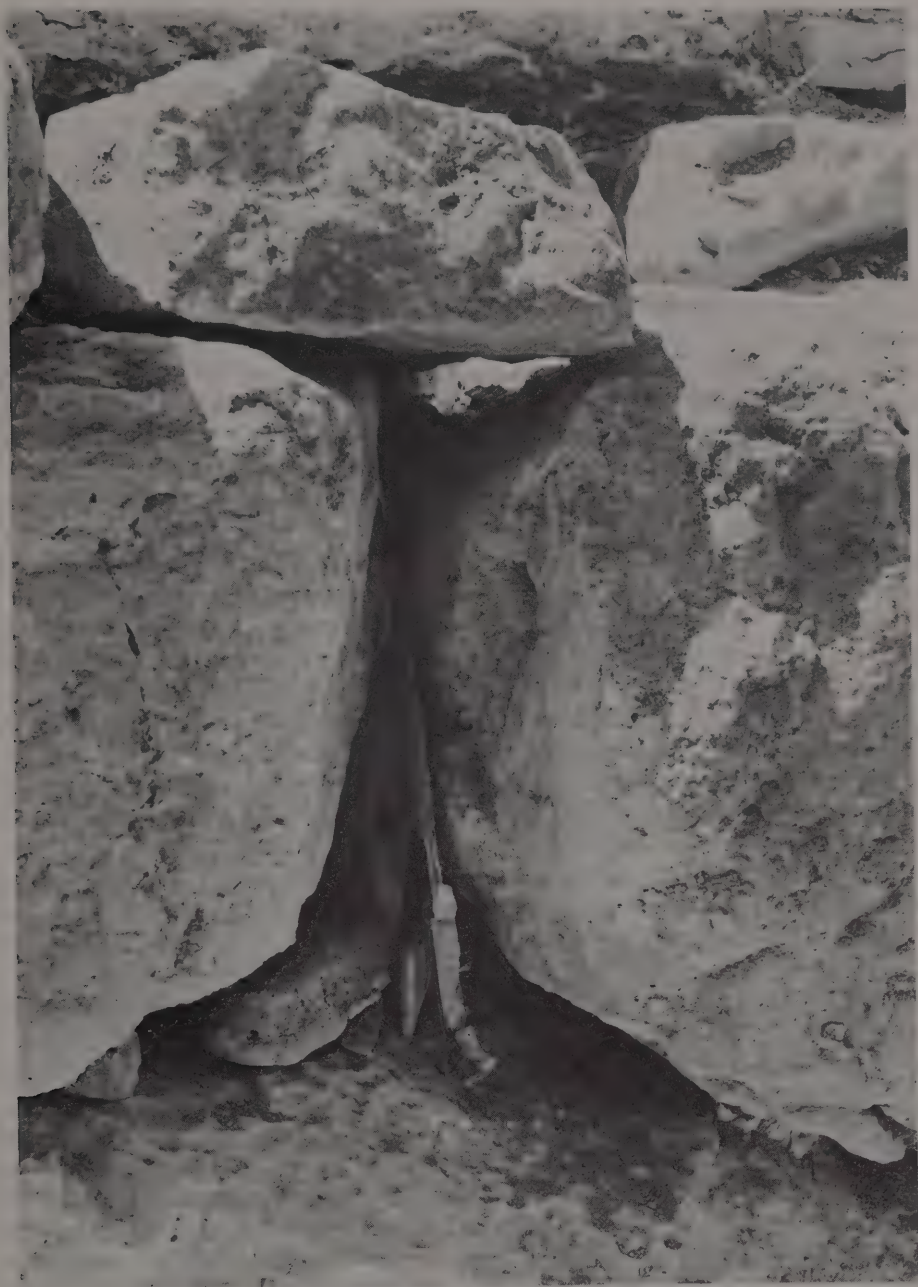


Plate VII Bronze hoard in wall, as found

propylon, a difference in level of about 10 m., had not been found. The discovery of a flat unworked stone sticking out of the scrub covering the N slope led in 1959 to the excavation of a partly preserved stairway consisting of 6 rough steps, destroyed lower down by a Hellenistic wall running across it (Plate VI). The stairway, built in a crevice of the rock, formed part of the earlier palace and led from a small paved court at the foot of the N. wall to a narrow ramp climbing up to the propylon (Mylonas, 1965a: 144f; 1961: 155ff; 1966d: 76f). The court was originally oriented towards the road ascending from the West, from the direction of the Lion Gate. Later, when the Postern Gate was built, a couple of steps were added to the court, connecting it with the new road coming up from the East between the wall and the retaining walls built along the abrupt N. slope. The stairway was obviously the earlier ascent to the palace but it was kept in use to the very end as the everyday, not to say the main, access to it. Among the stones of the low retaining wall bordering the western road a bronze hoard was found (Plate VII), concealed there in late Mycenaean times and never recovered (Mylonas, 1965a: 45; 1966d: 77).

The propylon itself was completely cleared and investigated afresh (Mylonas, 1965b: 57ff; 1966d: 66f). It had been built on top of an earlier one which it had covered up entirely and consisted of 2 monostyle porches divided by a cross wall with a door in the middle. Its floor lay considerably higher than the paved end of the ramp leading to it and must therefore have had a couple of steps in front of the outer porch. Along its east side, but at a higher level, lay an oblong room of which very little survives, probably a stepped passage from the entrance to the palace apartments on the summit (Mylonas, 1965b: 60; 1966d: 67). On this summit only the rock surface and the foundations of the Hellenistic temple are to be seen. Mylonas was able to discern a few faint vestiges and cuttings, which led him to assume that this had been the site of the original MH and early Mycenaean palace building; presumably oriented to the South (Mylonas, 1966d: 59, Fig. 14, 69f).

In the surviving ruins on the summit both Tsountas and Wace had recognised the palace of the rulers of Mycenae and distinguished the residential quarters from the state apartments. They had also assumed that those ruins, surveyed and drawn later by Holland (see Fig. 4), represented the entire installation (Tsountas, 1893: 35; Wace, 1921-3: 147ff, Pl. II). Now it is true that to the North, to the West, and to the South the building area is limited by the terraces on which the palace is founded. To the East, where the rock slopes down more gently, no remnants of buildings were to be seen, except for a few paltry Hellenistic walls. The nearest Mycenaean construction, some 25 m. to the East, was a row of basement rooms which, as Wace saw it, formed part of the West wing of the House of Columns (Wace, 1949: 94, Figs 32, 33, W1-W4). But the level of these basements is at least a whole storey higher than that of the house itself and they did not seem to be connected with it. They must, therefore, belong to another building which could not possibly have spread in any other direction except to the West, towards the palace.

The surface of the rock was subjected in 1965 and again in 1973 foot by foot to



Fig. 8 The East Wing of the Palace, after Mylonas

the closest scrutiny possible (Mylonas, 1967: 87). One after the other, a few fissures and hollows of the rock were discovered which had kept some remnants of hard-packed clay, stones and bits of walls. These few traces are too scanty and too far from each other to yield a recognised ground plan, but it was apparent that they were the remnants of a fill which in the past had levelled the whole area between the palace and the buildings to the East (Fig. 10, 3). In other words, the terracing for the palace extended uninterruptedly in this direction too and covered the summit and the east slope in 3 stepped levels. Consequently the structures founded on it were no private houses, but parts of the palace, forming its east wing (Fig. 8) (Mylonas, 1967: 94; 1966a, 426).

The buildings of the first, the uppermost, level left no intelligible traces. The second, somewhat lower, 23.50 m. long and 5.50 m. wide, is covered with Hellenistic houses. It is limited to the East by a curved passage, christened the East Corridor (Fig. 8, A-A) (Mylonas, 1967: 88). The third level, broader than both the others together, supports a sizeable, practically square, LH building, overlaid with Hellenistic walls and partly excavated in the past (Fig. 8, 1-6). It was systematically investigated in 1965 (Mylonas, 1967: 89ff; 1966a: 420ff) and was found to be divided by a long, narrow court into 2 equal and similarly arranged parts, both consisting of a row of rooms opening on a corridor running down their length. The row of rooms to the East are those attributed by Wace to the House of Columns. The entrance to the building, accessible by a low ramp (Mylonas, 1967: 92; 1966c: 422), lies North and leads to a narrow corridor, which runs the entire width of the building. At the West end of the corridor is a stairway to the upper floor and at its East end there was a door, later blocked up, which led to the adjacent House of Columns (Fig. 8, 7). The West wing, built on a higher level, had only 1 floor, the East had 2. The usual arrangement of the rooms shows that the house was no residence but must have served some other purpose. What this purpose was is indicated by the ramp at the entrance, built in all probability to facilitate the transportation of heavy objects which could not be hauled up a stairway, and is further completely clarified by the objects found wherever the fill had been undisturbed (Mylonas, 1967: 93f; 1966a: 425ff): hundreds of ivory chips and cuttings of gold leaf, fragments of opal stones with flaws in them, a block of steatite from which several pieces had been hammered off, half a stone vase, unworked pieces of quartz, lumps of copper slag, part of a bowl of rock crystal with a break in it, chunks of blue paint, painted stucco fragments, mainly of offering tablets and, finally, pellets of a yellow sticky substance which contained sulphur and colophony and was probably a metal solder. The building was obviously the workshop of the palace artists and craftsmen, who worked for the ruler (Mylonas, 1967: 94; 1966e: 426; 1966d: 73). It was destroyed by fire and the pottery recovered from the calcined debris as well as that found among the undisturbed floor deposits dates the destruction to the transition from LH IIIB to LH IIIC, that is to say to the end of the 12th century BC.

As already mentioned, the artists' quarters were connected by a door to the entrance of the House of Columns (Fig. 8, 8-16) (Mylonas, 1969: 14; 1968c: 19). This shows that this building, too, was part of the same complex, namely the East palace wing.



Fig. 9 North-east extension, after Mylonas

The entrance to it takes the form of a long corridor which runs along the artists' building and leads to a rectangular court surrounded by colonnades. To the North of the court there is a roomy megaron-shaped apartment (Fig. 8, 10). A staircase east of the megaron led to the upper floor. To the south the court is bordered by 6 basement rooms (Fig. 8, 14–16), almost entirely excavated by Tsountas and Wace, who had found a number of storage vessels. The investigation of the few unexplored pockets produced sherds from the last years of LH IIIB and a fragment of a Linear B tablet mentioning *pawea koura* (pieces of light cloth) (Mylonas, 1969: 11; 1968c: 25, Fig. 12).

The House of Columns is the biggest and stateliest building of the East wing of the palace. It is founded on a broad, 6 m. high terrace (Mylonas, 1969: 10; 1968c: 12ff), supported not by the adjacent cyclopean wall but by a strong retaining wall of its own. Its fill has covered several earlier structures which cannot be defined with any degree of accuracy (Mylonas, 1969: 10). The house itself, perhaps the residence of the palace intendant, was built in the second half of the 13th century BC (Mylonas, 1969: 9; 1968c: 23) and was destroyed some 50 years later by the same fire as the artists' quarters (Mylonas, 1969: 14; 1968c: 26f). It was then rebuilt with a few changes – the door to the workshop was walled up and the megaron divided into smaller rooms, one of which



Fig. 10 The palace, after Mylonas

yielded fragments of a terracotta chimney pipe (Mylonas, 1967: 13; 1968c: 35) — and inhabited till the end of LH IIIC (Mylonas, 1969: 13; 1968c: 33). At the end of this period it was abandoned without suffering any destruction (Mylonas, 1969: 14).

The House of Columns is entered from a triangular open area, bordered to the North and to the South by 2 more buildings, designated by the Greek letters Γ (Fig. 8, 21–24) and Δ (Fig. 8, 18–20) (Mylonas, 1968a: 106f; 1969: 14ff, Fig. 1). Only their basements survive. The facade of Γ was built against a low outcropping of the rock and Δ had a veranda in front of it, traversed by a drain. They were both thought to be Hellenistic but the careful exploration of their ruins in the campaign of 1967 proved that they, too, were related to the palace, that they had been built in the 13th century BC (LH IIIB) and that they had been occupied during the whole 12th century BC (LH IIIC).

To the west of building Γ , on the slope above the Postern Gate, an oblong structure was discovered consisting of several storerooms in a row (Fig. 10, S), in which several large pithoi and a great number of smaller pots were found (Mylonas, 1970a: 6ff). They must have been used to store grain and other dry goods because one of them, broken already in antiquity, had been mended with a little clay, so that it could not possibly have held any liquid (Mylonas, 1970a: 15). Constructed in LH IIIB, the building burned down at the end of this period. The superstructure crashed down and buried under its debris the contents of the ground floor, among which there were some molten and distorted lead and bronze objects and 2 fragments of a Linear B tablet, bearing an inventory of foodstuffs such as flour, barley and olives and mentioning a man called *arekeseu*,

Alexeus (Mylonas, 1970a: 8; 1970b: 48–50). After the fire, the destruction debris was levelled and covered with a hard-packed LH IIIC layer, over which a road was laid (Mylonas, 1970a: 9), leading down to the east slope and to the north-east extension (Fig. 9). Within this extension, Schliemann had dug in 1874 one of his trial trenches. It was later excavated in part by Tsountas, who brought to light some low walls which he covered up again. In the summer campaigns of 1964 and 1965 the whole area was cleared (Mylonas, 1966c: 74–76; 1967: 85f; 1966d: 32). Two buildings, A and B, were uncovered, both built against the cyclopean wall. The building to the South, A, had been literally devastated by Schliemann's workmen. Only a small basement room, containing 6 pithoi, had been left undisturbed, and part of the adjacent room, with half a bath tub in situ. The other half lay in Schliemann's trench and has been lost. Building B consisted of a large apartment, flanked by 2 narrow rooms on the East side and another one at the back, built right against the fortification wall. The entrance to the building is at its north-west corner, looking towards the underground fountain and the North gallery. A narrow paved way between the 2 houses led to the South gallery. The pottery from both buildings and from under the paving of the road dates their construction to the end of LH IIIB and shows that in the last years of the 12th century BC they were still occupied and in use.

Thus, the excavations and clearing operations conducted by Mylonas in the years 1964–1968 within the vast area already explored by Tsountas and Wace proved that in the 13th century BC the palace extended to the east end of the citadel and that the East Corridor separated the residence quarters in the North (Fig. 10, 1) and the state apartments in the South (Fig. 10, 2) from the administration wing in the East (Fig. 10, 4). Also, they yielded enough material to date the buildings explored and determine satisfactorily their building and destruction periods, which seem to be the same for the entire palace. Finally, it was shown that the north-east extension was no place of refuge for the people living around the citadel, no *Fluchtburg*, as it has been repeatedly maintained, but that it was densely and continuously occupied till the end.

The part of the citadel to be explored last with unexpected and extremely significant results, is the south-western and southern slope, an area c. 150 m. long and 35 m. wide between the incline of the hill and the cyclopean circuit wall, which serves here as a retaining wall as well. The part adjacent to the House of the Warrior Vase was excavated by Wace in 1920 and then again in 1954–1968 by him and by Lord William Taylour. The rest had been more or less dug by Tsountas in 1886 and 1890 (Tsountas, 1893: 43f) but had been left mostly unpublished.

The House of the Warrior Vase is built against another structure which accordingly is earlier. Wace christened the section which he excavated in 1920 the South House (Wace, 1921–3: 86ff). In 1954, when he uncovered some adjacent apartments, he thought that they belonged to another building which he named the Citadel House (Wace, 1955: 177f; Taylour, 1962: 35ff). It appeared, however, afterwards that those rooms belonged partly to the South House and partly to another complex, the cult centre of Mycenae (Taylour, 1969: 259).



Fig. 11 The cult centre of Mycenae, after Mylonas

The South House is a big building of which survive not only the stone-built basements but also parts of the upper floor, consisting of walls constructed of mud-bricks strengthened with timber frames and coated with yellow clay. The fire which destroyed the building baked the walls into a hard water-resistant mass and so preserved them to this day. A few single stone steps, found among the burnt debris show that the northern part of the house higher up the slope had at least 2 storeys. The lower may have had 3. Among the ruins were recovered in 1960 the first Linear B tablets to be found within the citadel of Mycenae. They mention among other things a goddess of agriculture (*Sito potnia*), fullers (*knapeusi*) and *kyanoworgoi*, workers in lapis lazuli (Chadwick, 1962: 58ff; Olivier, 1969: 22f).

The area next to the South House is occupied by the cult places of the citadel (Fig. 11) (Mylonas, 1972b). A well-built, comfortable flight of stairs (Mylonas, 1972a: 119; 1973a: 151) leads down to an ample landing from which a broad roadway, parallel to the slope, descends gently from East to West (Fig. 11, 1). An especially well-worked and well preserved conglomerate threshold (Mylonas 1968a; 109; 1972a: 118, Pl. 164b), frescoes painted in a dado (Mylonas, 1972a: 119) on the inner side of the flanking wall and the stuccoed surface of the roadway show that it used to be roofed, at least till the point lower down where it reached the South House. From there it turns sharply to the



Plate VIII Roadway and Temple



Plate IX Temple with altars and slaughtering stone

south-east, leading to a big open hall (Fig. 11, 2, Plate VIII) built in front of an exiguous room where Tsountas had found the so-called palladion (Tsountas, 1887: 162–164; 1893: 161f; Mylonas 1966d: 146), the well-known plaster tablet on which is painted a shield-shaped goddess and a small altar between 2 women. The area was further investigated by Wace in 1950 (Wace, 1951: 254f) and finally cleared by Mylonas in 1971–1972 (Mylonas, 1973a: 155; 1974a: 177ff). In the plaster floor of the hall a flat stone block was sunk, clearly a slaughtering stone, since it lies in front of a horseshoe-shaped altar coated with 7 unpainted stucco layers (Plates IX, X). At some later time the floor of the hall was raised, the stone and the altar were covered and a new square stone altar was built to the left of the entrance (Plate IX, middle foreground) (Mylonas, 1973a: 154), rather similar in shape and construction to the contemporary altar found at Kition in Cyprus (Karageorghis, 1971: 231; 1973: 15, Pl. XIIb). The building is obviously a temple and its 2 building periods concur with the double surface



Plate X Horseshoe-shaped altar and slaughtering stone

of the roadway, which had been stuccoed twice, in 2 distinctly separate layers (Mylonas, 1974a: 121). Both periods belong to the middle of LH IIIB.

Lower down the slope, to the west of the temple, Lord William Taylour uncovered in 1968 and 1969 2 structures, separated by a narrow corridor (Taylour, 1969b: 91–7; 1970: 270–9). Their lay-out was studied again in 1973 and 1974 by Mylonas and Iakovidis (Mylonas, 1974b: 55–7; 1975a: 99f). The eastern one consists of a main room with a vestibule in front of it (Fig. 11, 3). In the main room there is a rectangular clay altar, benches built along the walls in the back and, above them, an exiguous alcove accessible by a steep narrow flight of stairs along the east wall. In this alcove were stored several terracotta idols of coiled snakes (Plate XI) and of particularly and, no doubt, intentionally ugly-looking deities or demons (Plates XII and XIII), perhaps recalling the Furies, obviously of a chthonic character. Mylonas believes them to be apotropaic, guarding the citadel and the country against evil and stored, between processions, in the



Plate XI Terracotta snake from shrine (courtesy of Lord William Taylour)

alcove (1972b: 30). This may very well be the case with the human figures. The snakes, however, point rather to an underworld cult, combined, perhaps, with the prophylactic properties usually attributed to the snake as guardian of the household. More were found in situ on the bench below the alcove. The western structure has at least 6 rooms, of which the biggest in the middle (Fig. 11, 4) was decorated with frescoes depicting a goddess in front of a column, horns of consecration and a female figure wearing the plumed cap associated with sacral representations and holding up 2 sheaves of plant stalks, a fertility goddess or, perhaps, her high priestess. Both shrines were originally oriented to the West, on a small court with a high circular altar in the middle (Plate XIV) (Mylonas, 1974a: 122f). Later, towards the end of LH IIIB, they were severely damaged by an earthquake (Mylonas, 1974a: 123; 1975: 102). The altar was carefully covered with a layer of clay and buried, and the doors to the court walled up. A new entrance seems to have been opened to the South, near the cyclopean wall, and the building continued to be used.

Below the upper temple is the so-called Tsountas House (Fig. 11, 5) (Tsountas, 1893: 43ff; Wace, 1949: 66f; Mylonas, 1966d: 79). It was certainly a house, probably the residence of the high priest, and burned down at the end of LH IIIB without being rebuilt.

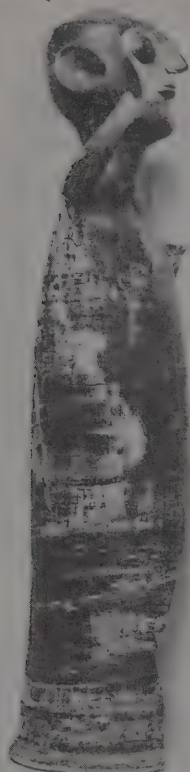


Plate XII Terracotta idol from shrine (courtesy of Lord William Taylour)

The processional way, the temple, the 2 shrines, the court with the altar in front of them and Tsountas House clearly belong together. They constitute the cult centre of the citadel of Mycenae, which is remote from the palace, seems to have been entirely independent and to have combined the places of worship of the deities of war, of fertility and, probably, of the underworld. Founded in the middle of LH IIIB, around 1250 BC, it was partly destroyed by fire due to an earthquake at the end of the 13th century BC, after which its buildings were repaired and somewhat altered. Still later, in the 12th century BC the cult places were abandoned and the whole area was built over with small houses (Mylonas, 1968a: 109–10, Fig. 4, Plates 93b, 95a).

Parallel to the back wall of the House of Tsountas is a narrow stairway of flat stone steps leading down to the foot of the cyclopean wall. Along the stairs runs an open drain. On the other side of the drain 2 rectangular rooms and a corridor (Fig. 12, 3) were excavated by Mylonas in 1970. They yielded several large, well preserved and beautifully painted pieces of frescoes which belong to the best works of Mycenaean art; a couple of

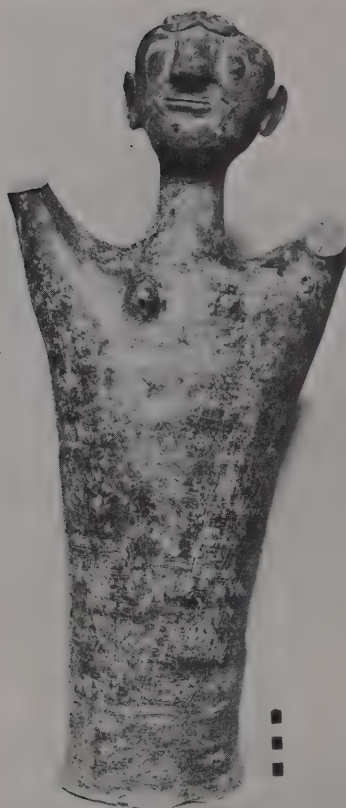


Plate XIII Terracotta idol from shrine (courtesy of Lord William Taylour)

typical Mycenaean figure-of-eight shields (Plate XV), clearly part of a frieze, and the torso of an imposing female figure, the Lady of Mycenae (Plate XVI), richly clad and bedecked with jewels, her hair in long coiled plaits reaching to her waist and a necklace of gold and cornelian beads in her right hand (Mylonas, 1972a: 122f, Plates 170, 171 and colour plate). The bottom of the staircase was buried under a 6 m. high fill, the upper part of which, divided in 3 distinctly superimposed layers, had accumulated during the LH IIIC period (Mylonas, 1970a: 10f; 1972a: 121f). In the top layer were fragments of frescoes, the importance of which lies mainly in the fact that they belong to the very end of the LH era. The largest fragment represents the head of a woman (Plate XVII) (Mylonas, 1973a: 147, Plate 180), very similar to a considerably earlier one found in the palace of Pylos.

Further east the area was densely occupied by houses, excavated in the past by Tsountas and investigated again by Mylonas and Iakovidis (Mylonas, 1975a: 103ff; 1974b:



Plate XIV Shrines from west and circular altar in front of them

53–5). Several pockets of fill had been left undisturbed and the finds from them, although insufficient to help determine the original function of the buildings, were ample enough to date them. As a rule, only the thick stone walls of their low basements have survived, but their outlines at least are clear (Fig. 12, Plates XVIII and XIX). They belong to spacious buildings arranged in superimposed levels and divided from one another vertically by stairways, usually combined with drains, going down the slope, and horizontally by narrow lanes between levels. Several rooms, among which a staircase leading to the ramparts (Fig. 12, 4) were built against the cyclopean wall. Most of them had been built in the second half of LH IIIB, some even later, in the 12th century BC. Not a single one showed any traces of burning. They were abandoned without being destroyed and were not interfered with until centuries later, when they were dug into and damaged by the Hellenistic houses built on top of their ruins.

The investigation of the citadel is still going on. It will have to be continued for a long time and will surely uncover much that is unexpected and perhaps surprising. But it has already led to a much more detailed and at the same time comprehensive knowledge of the installations on the hill and their development (Fig. 13 and Plate XX). Thus, the



Fig. 12 Houses to the east of the cult centre

general picture has been considerably clarified and many an obscure and doubtful issue satisfactorily settled.

The hill of Mycenae was thickly settled in MH times and must have been already the seat of the local ruler. Except for the royal shaft graves, very little has survived from the first 2 centuries of the LH period, but the first, modest palace must have stood already on the hilltop, turned apparently to the South. The first fortification wall was built not before the middle of the 14th century BC in a manner fully developed by the Hittites and already employed in Tiryns but otherwise not usual in the Aegean. At the same time the lords of Mycenae extended their palace by constructing spacious terraces on which to found it, thereby adapting the site to the buildings and not, as formerly, the buildings to the site.

In the course of the next couple of centuries the wealth and the might of the Mycenaean *anaktes* kept increasing. Situated strategically astride the road leading from the Levant over the Peloponnese and the Isthmus or across the Corinthian gulf to Boeotia, Thessaly and further north, it was bound to become one of the main, and perhaps the principal seat of authority to direct and control the exchange and circulation of cultural and material goods and influences all over Mainland Greece. Very soon it appeared that the citadel, as it was first built, did not dispose of enough space to store the rich harvests and the evergrowing production of a constantly increasing and better cultivated region,

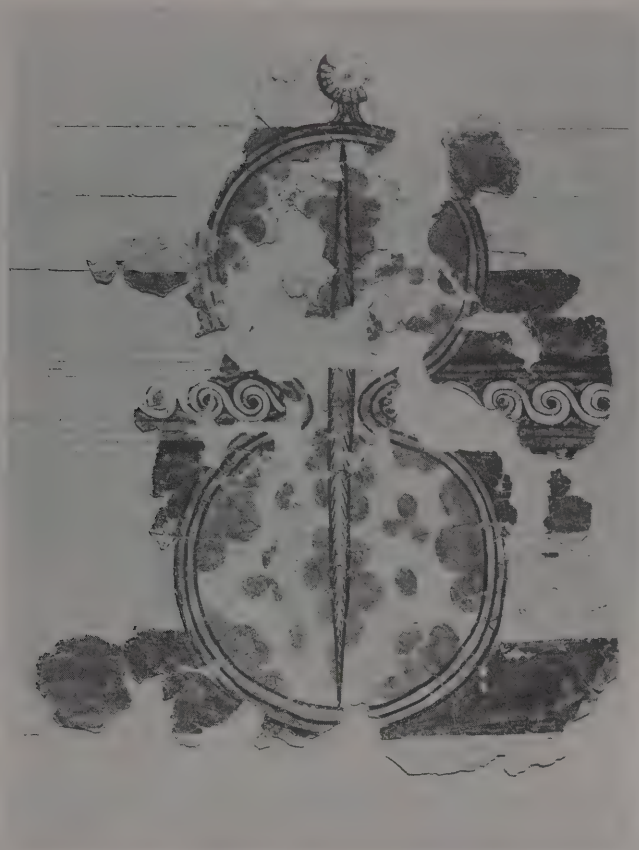


Plate XV Fresco of figure-of-eight shield

nor could it accommodate the working and administrative personnel that was needed. It may also have been considered as no more equal to the growing prestige of its powerful *anax*. At all events the whole installation was radically remodelled. The new citadel was far larger and much more imposing than the earlier one. It expanded towards the South-west, where the slope was less abrupt, the new enceinte encompassing the graves of the old kings. It was also provided with 2 impressive gates constructed of well-worked conglomerate blocks, the main one being decorated with the lion relief as well. Still more significant is the fact that the palace area, accessible as previously from its North side, was doubled, in order to accommodate all the necessary storerooms, administrative buildings and workshops, which had to be constantly extended and multiplied. Part of the newly added area was devoted to the cult of the gods, which was obviously not practised personally by the *anax* (Mylonas, 1968b: 127ff; 1974a: 126). The rest was



Plate XVI The Lady of Mycenae

occupied by the palace attendants, the administrative personnel, the craftsmen, the priesthood and the garrison. Thus, the citadel followed the arrangement of the Cretan palaces, being in addition enclosed by a strong circuit wall.

But, formidable as it may look, it was still no fortress. Without a secure and constant water supply, it could not possibly have withstood a prolonged siege. The fact that they did not bother to cope with this problem for such a long time shows that the citadel was not conceived in the first place as a stronghold, and that they did not have to fear anything worse than short and not particularly dangerous small scale raids. Times were peaceful and the citadel was the hub of a complicated commercial, administrative and governmental establishment. It was at the same time the seat of the ruler, the treasury of his realm, his chief centre of production and his main commercial station. It was also the domicile, not the refuge, of the numerous people who directed, supervised, controlled and recorded these diverse activities and who turned them financially and politically to account.

During the last quarter of the 13th century BC a violent earthquake, signs of which have been noticed both inside and outside the citadel¹, overthrew the palace and many other buildings and started fires which caused the total destruction of several of them.

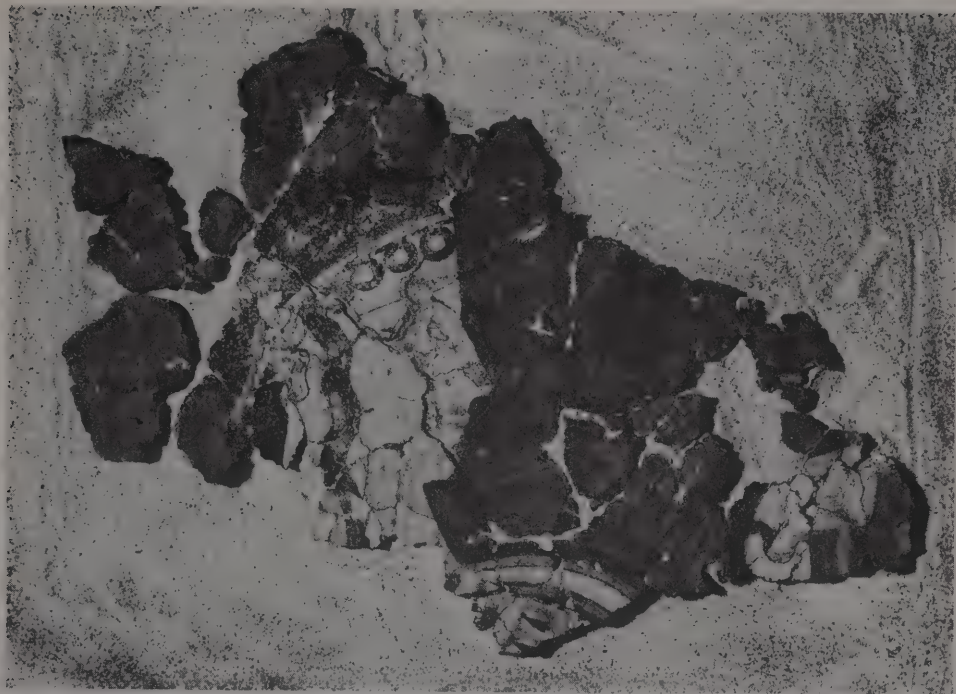


Plate XVII LH IIIIC fresco fragment representing head of woman

Immediately afterwards they were all repaired and set to right. The Great Ramp was broadened, House M and the storerooms in the cyclopean wall were built, the Grand Staircase was erected at the south side of the palace and the North-east extension with its houses and with the underground cistern added to the enceinte. For the first time the citadel was made really impregnable and now, when it had nothing to fear from enemy attacks any more, came unexpectedly the end. Not as a result of enemy action.

The devastation of Anatolia and of Canaan at this time by the so-called Land-and-Sea Peoples severed the Achaeans from their commercial exchange stations in the East Mediterranean (such as Ugarit) which were the terminating points of both the caravan routes from the interior and the shipping routes from the sea. With the passing of the centuries these cities had become the nerve centres of an intricate network of commercial links, regulating contacts and exchange of goods between Egypt, Mesopotamia, Asia Minor and the Aegean. On the other hand, the economy of the Achaean states was based on the palaces, which were the main controlling points and export stations and had alone the capacity for co-ordinated commercial and economic planning on a large scale and under a unified control. Thus, the participation of Greece in the economic life of the then civilised world depended entirely on the ability of its local



Plate XVIII Houses to the east of the cult centre



Plate XIX Houses to the east of cult centre

rulers to organise the economy of their own realms and to maintain regular overseas contacts with the ports of Syria and Palestine. The destruction of these ports by the Sea Peoples broke the threads of contact and disrupted the movement of goods and men between the Aegean and the East Mediterranean. Although the Achaean *anaktes* could still gather the products of their countries and make them available for export, they had no longer the means of channelling them into foreign markets with the same ease as before, nor could they any more keep up the inflow of imports in sufficient quantities. Thus it became increasingly difficult for them to co-ordinate and control the commercial life of their states, and the weakening of the system that had maintained and strengthened central authority resulted in the diminishing of the power of the rulers. In other words, the destruction of the commercial centres of Canaan brought about the decline of the palaces in Greece. The *anaktes* lost their former grasp on all industrial and commercial activities and their financial and political power dwindled accordingly. The collapse of the



Fig. 13 The citadel, after the recent excavations. Courtesy of Prof. Mylonas



Plate XX The citadel (courtesy of the Hellenic Air Force)

palace society could not be staved off any more. With the passage of time, the threads left dangling were gradually taken up again, though on a small scale and mostly by coastal settlements, formerly insignificant or even newly founded, each with a much smaller region under its control, little political strength and limited capacity for production and trade. The internal structure of the Achaeon world changed radically (Iakovidis, 1974: 297ff).

This process is especially clear in Mycenae. The recent excavations proved that during the 12th century BC not only the Granary but also the palace itself and all the buildings on the west and south slopes as well as along the north wall were occupied, but had lost much of their former splendour and grandeur. Damage was no longer repaired, buildings were left to decay and around 1100 BC the whole citadel had been practically abandoned, even before the final destruction by fire of the palace and the Granary, but not of the other buildings.

The development of the LH civilisation on the Greek Mainland is reflected stage by stage by the history of the citadel at Mycenae. The name of the site was fittingly chosen to denote this brilliant and sophisticated culture.

Note 1.

In the cult centre (Mylonas, 1974a: 123; 1975a: 102) the houses below the Atreus ridge (Mylonas, 1965b: 66; 1966b: 106) and the house at Plakes, north of the citadel, excavated in 1975 by Mylonas and Iakovidis (Mylonas, 1975a: 101). The importance of these observations for the history of the site, and, indeed, for the development of Mycenaean civilisation cannot be stressed too emphatically. Based on firm, incontrovertible excavation evidence, they provide, to the belief of the present author, the only satisfactory explanation for the general destruction which overtook Mycenae at the end of LH IIIB, but did not disrupt the evolution of its culture, nor bring about any appreciable change in it. This is a no less incontestable fact, which none of the explanations put forward so far has succeeded in answering convincingly.

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Current Culture History Issues in the Study of the Neolithic of Northern Italy

By Bernardino Bagolini and Paolo Biagi

Part I

Introduction and historical background of previous researches

This article presents a synthesis of our present knowledge of the Neolithic of Northern Italy as well as a discussion of the problems raised by most recent research in this area. To this end it is useful to review briefly the basic contributions of those authors whose efforts of the last 3 decades have given shape to the present situation.

PIA LAVIOSA ZAMBOTTI

Around 1940 Pia Laviosa Zambotti initiated her first attempt to incorporate the Neolithic and Copper Ages of Italy, and especially those of northern Italy, into the general framework of European prehistory. Laviosa Zambotti's interpretation was based on the hypothesis that the Neolithic and Copper Ages of Italy were secondary manifestations derived from eastern Mediterranean and Anatolian centres of diffusion by way of the Balkans. More specifically she felt the corresponding stages in the Balkans were the Sesklo-Dimini phases. On the other hand, she viewed the Impressed Ware material of Southern Italy as being derived from a post-Capsian North African source which diffused throughout the Mediterranean prior to the influences from the Balkan centre. In this general picture, southern Italy was viewed as one of the more active and autonomous hearths of the Impressed Ware Culture which in turn influenced the Körös Culture, supposedly developed from local Balkan Upper Paleolithic tradition. In her discussion of the northern part of the Italian peninsula, Laviosa Zambotti remarked upon the less developed and less complex qualities of the local Impressed Ware facies in comparison with that of the Molfetta material. The one exception to this pattern, the more diverse and lively Impressed Wares from the Ligurian caves, was ascribed to Iberian influence. Laviosa Zambotti recognised the great antiquity of the Italian Impressed Wares which terminated in an Early Copper Age (dated at 2500–2200 bc). This Early Copper Age was linked to Tibisco influences which were manifested in Northern Italy with the appearance of Square-Mouthed ceramics, the earliest signs of which appeared in Vinča I and Tordos. Laviosa Zambotti preferred to link the Italian Neolithic and Copper Ages to

the Balkans rather than to the Linear Pottery influences of Central Europe because she felt that the Italian material was more varied and dynamic and thus 'Balkan' compared to the rather stagnant central European material.

As for the north Italian facies which followed the Impressed Ware horizon of Liguria and the early sites of Emilia and the Veneto, Laviosa Zambotti saw a meeting of influences from southern Italy, embodied in a northward spread into peninsular Italy and the province of Matera of scratched wares and influences from the Tibisco Culture. According to Laviosa Zambotti the characteristic products of this fusion occurred in Square-Mouthed Pottery Culture horizon which combined along with the Matera scratched style, square-mouthed vessels, pintaderas, ladles with holes through the handles and small clay figurines of 'Balkan' origins. Emanating from its original Ligurian-Po Valley homeland, this particular complex reached the southern French caves where it mixed with the Chassey Culture as well as with the Lagozza sphere of the Po Valley; on the eastern border this horizon did not extend beyond the Karst caves. Laviosa Zambotti was disposed to believe that the close similarities between the open sites of Emilia and the Ligurian caves was the result of a peaceful and gradual hybridisation of cultural influences. In her view then, the importance of indigenous Mesolithic elements of Upper Paleolithic tradition cannot be disregarded, especially for the Emilian settlements.

LUIGI BERNABÒ BREA

Around 1950 Luigi Bernabò Brea established a new definition of the Neolithic in regard to its internal sub-divisions and its relationship to the Copper Age. He recognised the definitive characteristic and basic unity of the origins of the Early Impressed Ware Neolithic of the Mediterranean basin. This tradition of Impressed Ware seems to have persisted in France and Sicily until the Final Neolithic. In southern peninsular Italy the Impressed Ware complex was associated, probably shortly after its original appearance, with painted and scratched wares. This association appears to be especially true for Puglia during the earliest period of the diffusion of painted wares without meander-spiral motifs. Bernabò Brea suggested a Greek or at least a southern Balkan origin for the technique of painting pottery, while he was inclined towards a Near Eastern origin for Impressed and Scratched Wares, thus rejecting the theory of a post-Capsian source. The absolute chronology of the diffusion of the Impressed Ware Culture into southern Italy was attributed to the fifth millennium bc.

Bernabò Brea was largely in agreement with other authors on the importance of the Mesolithic in the formation of the earliest Neolithic Cultures, however, he did express reservations with regard to the Stentinello material from Sicily. He questioned whether the Stentinello Culture could have developed in a local Mesolithic context and felt rather that the situation reflected contact between late Tardenoisian groups with immigrants who made ceramics.

Bernabò Brea felt that the Ligurian Impressed Ware material was closely related to that of Provence and he seemed prepared to agree with various French authors of the definition of this manifestation as a 'Neolithic of Tardenoisian tradition'. According to

Bernabò Brea the end of the Early Neolithic and the beginning of the Middle Neolithic coincided with almost synchronous spread into the south of the Italian peninsula of facies with painted spiral motifs (of Balkan affinities) and the movement into Northern Italy of facies with Square-Mouthed Pottery, pintaderas and clay figurines (all of Danubian affinities).

In considering the Middle Neolithic of northern Italy in greater detail, Bernabò Brea, using Liguria as a reference area, distinguished between the oldest Square-Mouthed Pottery phase characterised by lobe-rimmed (*Bocca Quadrilobata*) forms with slightly flared and squared rims and a more evolved aspect characterised by true Square-Mouthed (*Bocca Quadrata*) forms. The latter aspect was thought by Bernabò Brea to represent the apogee of the Square-Mouthed Culture as manifest by massive diffusion of Danubian traits.

Bernabò Brea's research, along with that carried out contemporaneously by Malavolti in Emilia, resulted in the establishment of a clearer picture of the substantial homogeneity of the Middle Neolithic Square-Mouthed Culture found in northern Italy from Liguria to the Karst. This complex was notably different than the Neolithic facies of southern Italy which were characterised by painted meander spiral pottery. The situation in central Italy seemed less well defined because of the apparent fusing of northern and southern influences. Despite the fact that Bernabò Brea emphasised the relationships of the Middle Neolithic of northern Italy and in particular that of Liguria with the Danubian region, he still maintained that a few southern influences, in particular the form of certain vessels, were present in northern Italy. He also maintained that the chronological relationships between the northern and southern Middle Neolithic facies were documented by the presence of pintaderas and certain characteristics of the Square-Mouthed Pottery style in the context of the painted spiral meander wares of southern Italy. The Late Neolithic of northern Italy was characterised by Bernabò Brea, as usual on the basis of the Ligurian stratigraphies, in terms of the appearance of the Lagozza facies in which a set of well defined 'western' rather than 'eastern' traits occurred. However, the Lombardy 'palafitta' facies of the Lagozza complex was thought by Bernabò Brea to reflect strong continuity with the local Mesolithic 'substratum' as evidenced by curved backed points, borers, lateral burins, lunates, trapezes and transverse arrowheads. He was inclined to identify this phenomenon of cultural persistence found in the Lagozza palafitta material with presumably comparable effects of a strong current of local Mesolithic influence in the Fiorano villages of Emilia. During the Late Neolithic the Veneto region and the eastern Po Valley in general, which featured an extension of the Square-Mouthed Pottery Culture, were considered by Bernabò Brea to be under continued Balkan influence. In the western Po Valley, he recognised an internal diversity within the Lagozza complex. He linked the Lombardy facies to western Switzerland because of the similar type of palafitta settlements, while the Liguria facies was associated with material from southern France.

In contrast to the Square-Mouthed Pottery Culture, the Lagozza Culture penetrated into peninsular Italy, where, for example, in the northern Tuscan site of Norcia, one finds evidence for Lagozza influence alongside that of evidence of contact with Diana Bellavista Cultures. Bernabò Brea felt that the Lagozza Culture continued to evolve gradually in a

stylistic sense even influencing various peninsular Copper Age facies as far south as the Lipari islands (e.g. the Piano Conte phase).

Within the chronological framework established by Bernabò Brea, the division between the Ligurian Middle Neolithic, presumably influenced by Balkan sources, and the Middle Neolithic of southern France, which was unaffected by these Balkan influences, was viewed as the result of a temporary cultural lag of the Impressed Ware facies followed by a precocious appearance of a 'western' Middle Neolithic phase which reached as far as Switzerland. However, Bernabò Brea did not accept the theory of the priority of the 'western' French and Swiss Chassey IB and Cortaillod II phases over the corresponding Italian phases. His doubts were centered upon the presence of scratched decorations, usually thought to characterise the 'western' facies, which also appear in the Ligurian and Lombardy facies of the Lagozza complex. Bernabò Brea pointed out that the appearance of scratched decorations does not generally characterise the transition between the Early and Late Neolithic in France since the evidence from Camp de Chassey indicates that this technique of decoration appeared at a rather late stage. He further noted that the Swiss Cortaillod II, like the Italian Copper Age extensions of Lagozza, is characterised by series of 'Copper Age' elements such as perfectly cylindrical axes, tanged and almond shaped projectile points, concentric semi-circle pottery motifs and the like.

FERNANDO MALAVOLTI

In the early 1950's Fernando Malavolti carried out further research on the Neolithic of Emilia and furnished a viable scheme of the Neolithic Culture sequence of the region. Within the entity of the 'Chiozza Culture' previously defined by Laviosa Zambotti, Malavolti identified some significant sub-divisions. He noted the presence of the Fiorano Culture as earlier than the other facies of 'fondi di capanna' or Neolithic 'hut floors' thought previously to characterise only the Chiozza Culture. Malavolti retained the term Chiozza Culture but restricted its application to the middle facies of the Emilian Neolithic. The final facies of the local Neolithic was called the Pescale Culture which was in turn followed by the local Remedello Copper Age facies. According to Malavolti, the culture sequence of Emilia had the following characteristics.

The Fiorano Culture

The Fiorano Culture proper is geographically limited to the present areas of Reggio Emilia and Modena; however, there are analogous materials from the hut remains from Vhò near Cremona and the Sasso di Furbara facies in Latium. Malavolti also found certain comparable elements from the Neolithic of the Marche, the lower ceramic levels from Arena Candide and from Grotta delle Felci on Capri. The key characteristics of the Fiorano Culture were synthesised by Malavolti as follows: 'Settlements thinly distributed, huts with 1 to 3 'rooms' and storage pits – fine ware ceramics with characteristic forms – kitchen ware also marked by particular characteristics – vases with flat bases, fired internally at a very high temperature – grooved and 'little leaves' decorations – rolled cord decorations – unpainted figulina ware – chipped stone blade industry produced exclusively in flint – polished stone industry – polished bone industry'.

The Chiozza Culture

Malavolti retained Laviosa Zambotti's name for this facies, derived from the site of the same name, however, he defined the facies in a more restricted manner. He clearly singled out the relationships of the Emilian Culture with the material from Quinzano Veronese and with the intermediate levels at Arene Candide. The characteristics of the Chiozza Culture were synthesised as follows: 'Semi-subterranean huts', with numerous interconnected 'rooms' – square-mouthed vases, both Ligurian forms and shallow bowls – rough ceramics with either globular or truncated cone forms with flated bases – calcite crystals used as temper – impressed and soft incised decorative techniques on fresh clay – 'cercine' (i.e. small round applique bosses) pottery – fine scratched technique usually on wet clay and rarely on fired vessels – excising technique – spiral motifs – painted figulina pottery – 'pseudo figulina' pottery – shallow cylindrical container, possible cover or lid? – pintaderas – anthropomorphic clay modelling – disappearance of grooved decoration – unifacial projectile points – utilisation of obsidian, jasper and ftanite'.

The Pescale Culture

The Pescale Culture was defined exclusively on the basis of the abundant material from the site of the same name, the upper layer of which contained Remedello elements. Malavolti recognised also certain affinities in some categories of material with items found at Isolino di Varese and with the Lagozza Culture. The characteristics of this Culture were synthesised as follows: 'settlement habitat concentrated in naturally defensible areas, large huts slightly excavated in the soil – Lagozza style ceramics, some with attenuated features – monochromatic black ware in the form of small hemispheric bowls with corded rims – globular Square-Mouthed vases with incurved rims – lobe-rimmed vases – Polada decorative elements – triangular decorative motifs with curved edges appearing on handles and on the bases of truncated cone shaped vessels – incised meander decoration – grooved decorative technique (reappearance) – zoomorphic modelling of impressed lamps of clay – disappearance of Ligurian style of Square-Mouthed pots – disappearance of fine scratched decoration technique – bifacial projectile points of heterogeneous forms – evolved Campignan flint work – dog found among the food remains'.

LAWRENCE H. BARFIELD

Based on work begun in 1960 and carried out principally in the Veneto region, Barfield has developed the most up-to-date cultural chronology for the Neolithic Culture of northern Italy. In particular Barfield has concerned himself with the Square-Mouthed Pottery Culture, which he has divided into 3 successive phases and with its relations with the other facies of the northern part of the Italian peninsula.

Barfield largely agrees with Malavolti's definition of the Fiorano Culture, however, Barfield extends the geographic scope of this Culture to the Veneto (Le Basse di Valcalaona) and introduces the term of Vhò Group. Although Barfield does not accept the definition of a Fiorano-Sasso Culture as proposed by some authors to include northern and central Italian facies, he does recognise the close chronological and cultural connections.

Barfield has redefined, on the basis of his new sub-divisions of the Square-Mouthed Pottery Culture into 3 successive phases, the facies present in the intermediate levels of Arene Candide as well as providing a more restricted definition of Malavolti's Chiozza Culture. According to Barfield the Square-Mouthed Pottery complex is sub-divided into the following chronological and regional phases:

- (1) The Finale-Quinzano Phase. This is the oldest phase of the Square-Mouthed Pottery Culture and embraces the entire area of its diffusion from the Veneto to Liguria. In the latter region the Finale-Quinzano phase is superimposed immediately on the late facies of the Impressed Ware Culture, while in Emilia it is possibly partially synchronous with the preceding Fiorano Culture. The 'fossil guide' of this phase is the 'beaker' with a tall square-mouthed neck and scratched geometric decoration, the so-called 'Ligurian' form of the many Square-Mouthed Pottery forms.
- (2) The Rivoli-Chiozza Phase. This phase is known principally in the Veneto (where it is called Rivoli 'Spiazzo'), Lombardy and Emilia. The phase is characterised by large open bowls which carry a rich repertoire of incised, scratched and excised ornamentation in various spiral and other dynamic motifs (this is thought to be the era of more intense relations with the Danilo-Balkan area).
- (3) The Rivoli-Castelnuovo Phase. This phase constitutes the Late Neolithic of the Veneto and is linked to both Trentino and eastern Lombardy. Rivoli-Castelnuovo is thought to have developed contemporaneously with the Lagozza Culture. The phase is characterised by deep bowls bearing 4 small corner spouts and decorated with incised herring-bone motifs. Malavolti's Pescale Culture represents a local phase of rather long duration (as witnessed by Remedello traits in the upper levels at Pescale) which includes both elements from the preceding Rivoli-Chiozza phase as well as elements from the Lagozza Culture.

Part II

Description of the Neolithic Cultures of Northern Italy

THE IMPRESSED WARE CULTURE (Fig. 1)

In northern Italy the Impressed Ware Culture is currently known from Ligurian coastal caves and western pre-Alpine open sites. In the Ligurian cave stratigraphical sequence it is placed chronologically as the Early Neolithic. The pottery is decorated with cardial motifs as well as with finger-nail impressions and finger-pinched decorations. In general the coarse ware forms consist of deep vases with convex bases which are decorated with applique cordons positioned just below the rim. In the upper Impressed Ware levels of Arene Candide it appears that certain changes, already documented in Provence, occur in the ceramics where one finds true Impressed Ware associated with new scratched decorations. The chipped stone industry is generally poor in types and includes steeply and flat retouched isosceles trapezes. Some crouched burials are known, as usual from the

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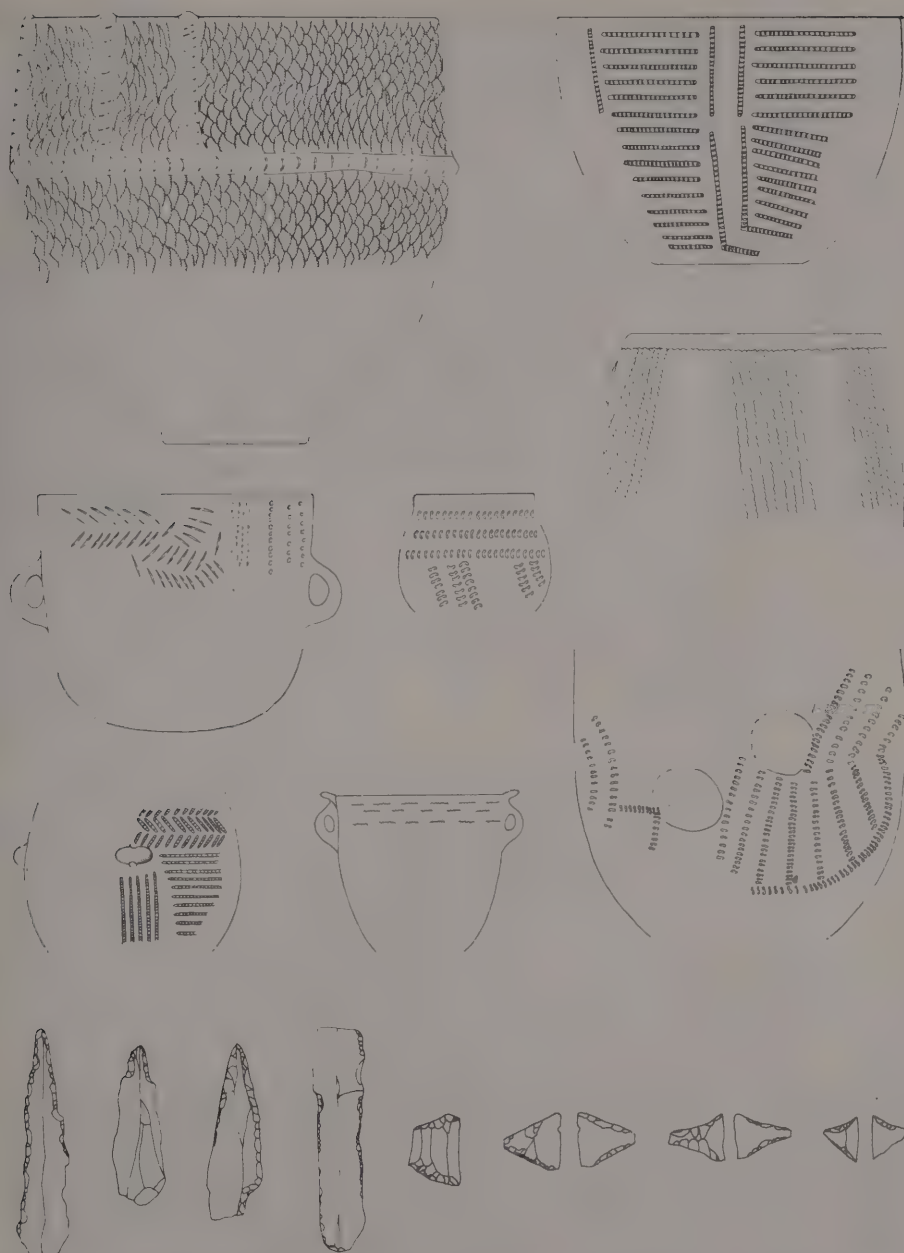


Fig. 1 Pottery and chipped stone industry of the Impressed Ware Culture. (Scale: pottery 1:5; flintwork 1:2.)

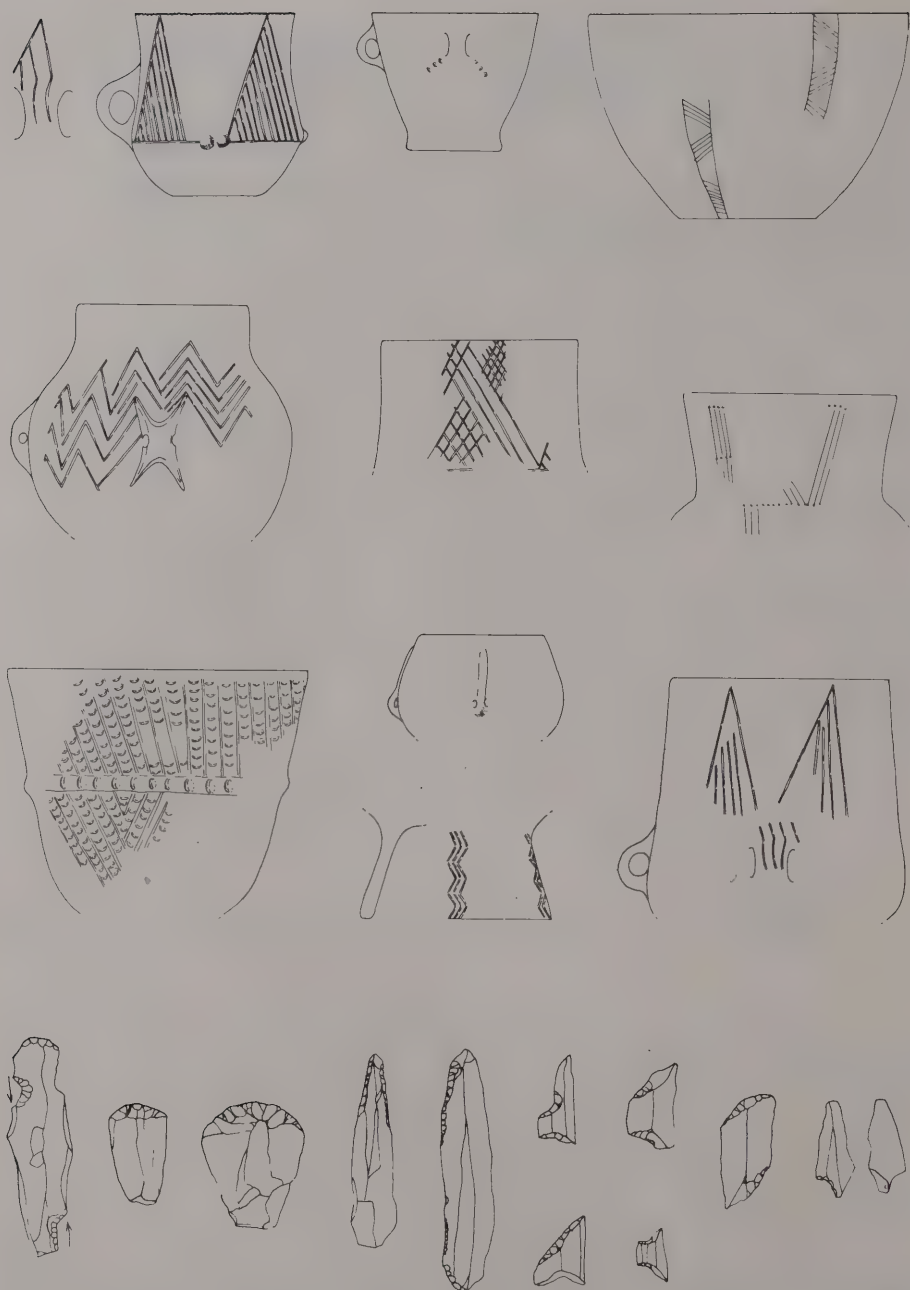


Fig. 2 Pottery and chipped stone industry of the Gaban Group. (Scale: pottery 1:5; flintwork 1:2.)

Ligurian caves, in which the deceased was protected by a stone slab. Bone items are not entirely absent and include large awls, sewing awls and pendants. The most common items of personal adornment are pierced sea shells. Detailed evidence of the economy is lacking even if wild animals would appear to predominate over domestic fauna.

THE GABAN GROUP (Fig. 2)

The Gaban Group, which at the moment is known only from sites in the Trento region, constitutes the Early Neolithic of the area. The material displays a very strong Mesolithic influence in the chipped stone industry which contains burins on a side notch, trapezes with or without piquant-trièdre points, rhomboids, microburins, denticulate blades and a strong tendency towards hyper-microlithism. No polished stone implement has been found up till now. The pottery comprises flasks with chevron incised decoration on the shoulders, larger flasks with incised net patterns on the neck, small bowls made in a very fine burnished paste, long necked cups decorated with long incised triangular motifs, double lugs placed on the edge of a carination and flat bases, small cups with impressed motifs starting at the handles, pedestal vessels with incised zigzag decoration, deep vases decorated with finger tip impressions. The Gaban rock shelter, which is the most extensively excavated site of the group, shows evidence of a deep stratigraphy through all the Early Neolithic period. The faunal evidence indicates the presence of red deer, roe deer and boar; ibex and chamois are less frequent as are hare, beaver, dormouse, squirrel, turtle and various species of fishes and birds; mollusc collecting was also practised.

THE FIORANO CULTURE (Fig. 3)

This culture which takes its name from the site of the same name excavated in the 1940's by Malavolti is known from Emilia, the Veneto and Tuscany. The fine pottery which ranges from clear polished black to a buff surface colour, includes carinated cups with small knobs on a single handle, spherical bowls with 4 handles perched on the rim, small globular jars and globular flasks with 4 handles. The coarse pottery which is of a red brick colour, features large deep vessels equipped with 4 handles and decorated with applique cordons descending from the rim to beneath the handles. The more characteristic fine ware decorative motifs include pairs of parallel grooves, stripes composed of bars and points, corn grain impressions and musical notes; complete decorative compositions consisting of above-mentioned motifs are common. The chipped stone industry which has a very high blade index, includes burins on a side notch, long end scrapers with steep fronts, straight awls, rhomboids, micro-burins and blades with marginal backed retouch. The polished stone industry includes greenstone rings and to a lesser extent large greenstone axes. Most of the settlements are open villages composed of oval, figure-eight or roundish 'hut floors'. To date, the faunal remains include red deer, roe deer, boar, hare and beaver; cow (probably domesticated), pig, sheep and goat; the molluscan remains include *Helix*, *Coclostoma* and *Unio*. The only floral material, 5 grains of *Hordeum sp.*, comes from 2 Emilian sites.

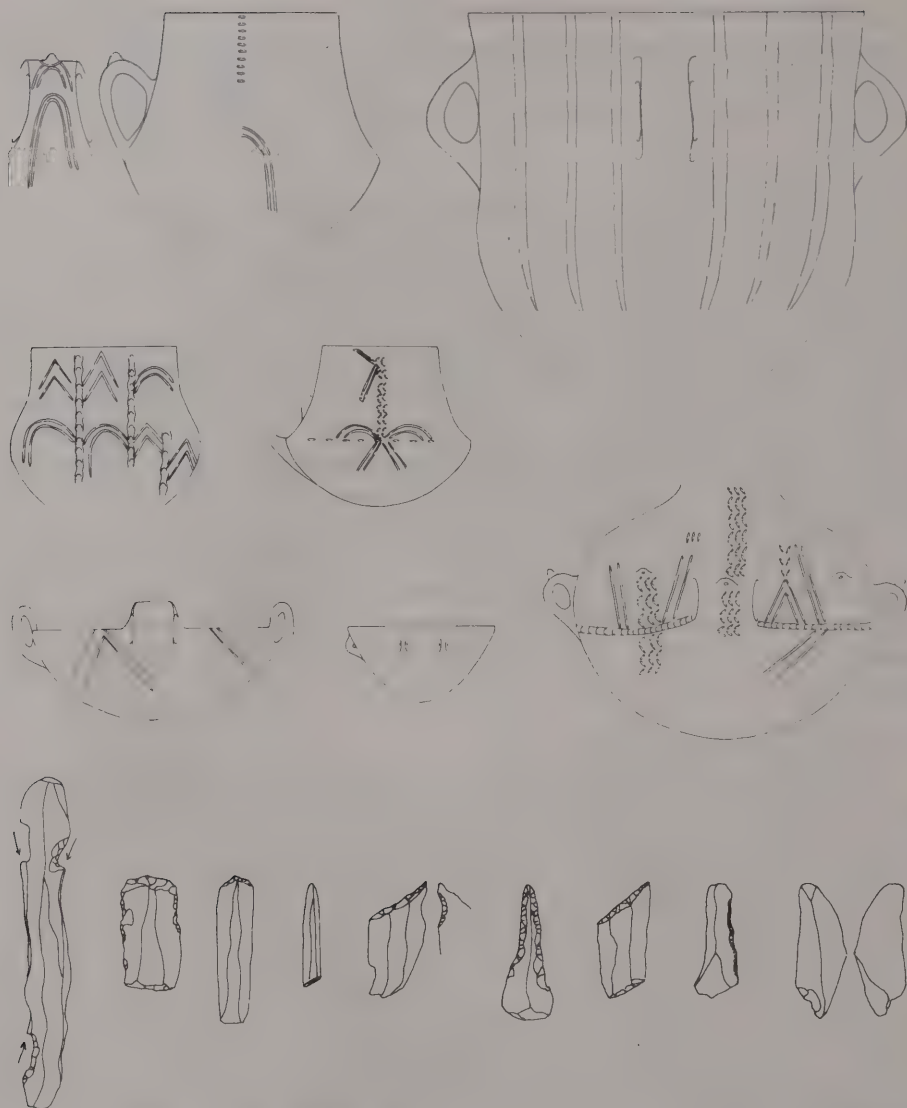


Fig. 3 Pottery and chipped stone industry of the Fiorano Culture. (Scale: pottery 1:5; flintwork 1:2.)

The Fiorano Culture has been assigned to the end of the Early Neolithic (the end of the fifth millennium) partially on the basis of the available C14 dates and partially on the basis of data from Emilian vertical stratigraphies in which the Fiorano material precedes the Square-Mouthed Pottery Culture.

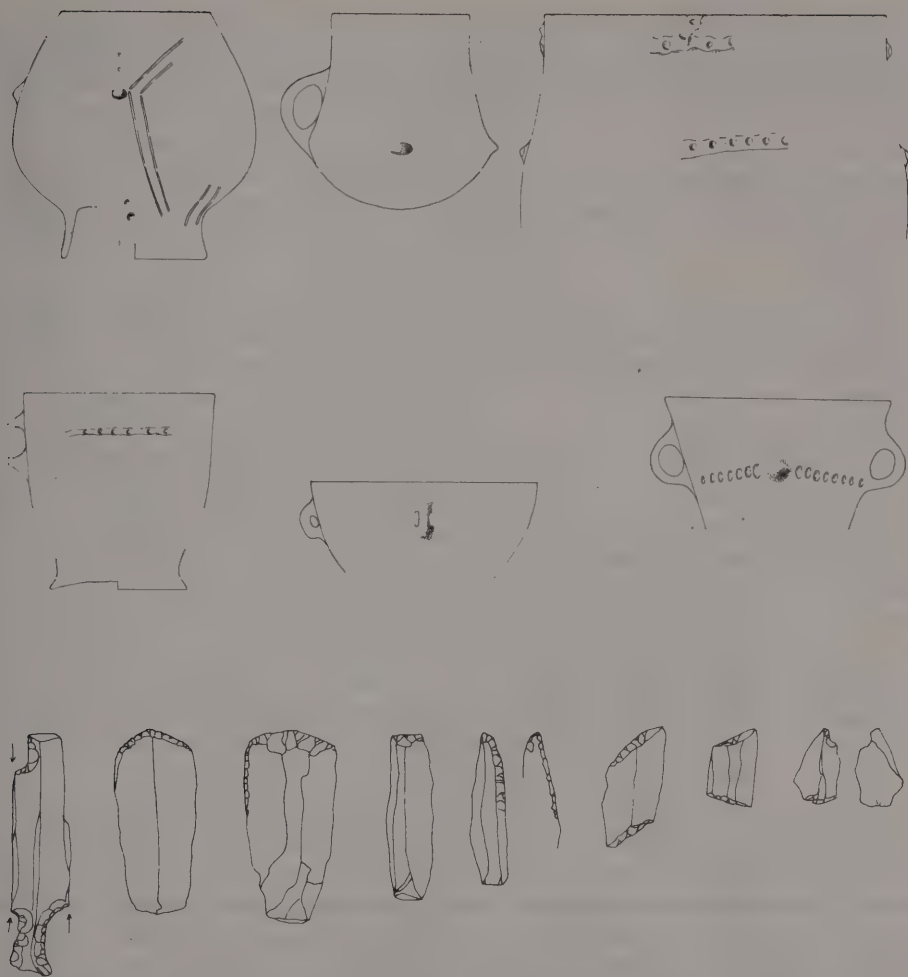


Fig. 4 Pottery and chipped stone industry of the Vhò Group. (Scale: pottery 1:5; flintwork 1:2.)

THE VHÒ GROUP (Fig. 4)

The sites are at present only known in south eastern Lombardy and the group takes its name from the village of Vhò near Piadena (Cremona). Most of the settlements were excavated at the end of the last century by Castelfranco and Orefici. The fine pottery includes pedestal vessels of various types, carinated cups with band handles and sometimes bosses on the carination, hemispherical bowls, 2 handled conical vessels with finger tip decoration and bosses, flasks, deep vessels with horizontal cordon decoration.

The coarse ware includes big deep vessels decorated with horizontal and vertical cordons. Scratched motifs, paired grooves and corn grain impressions also occur in the

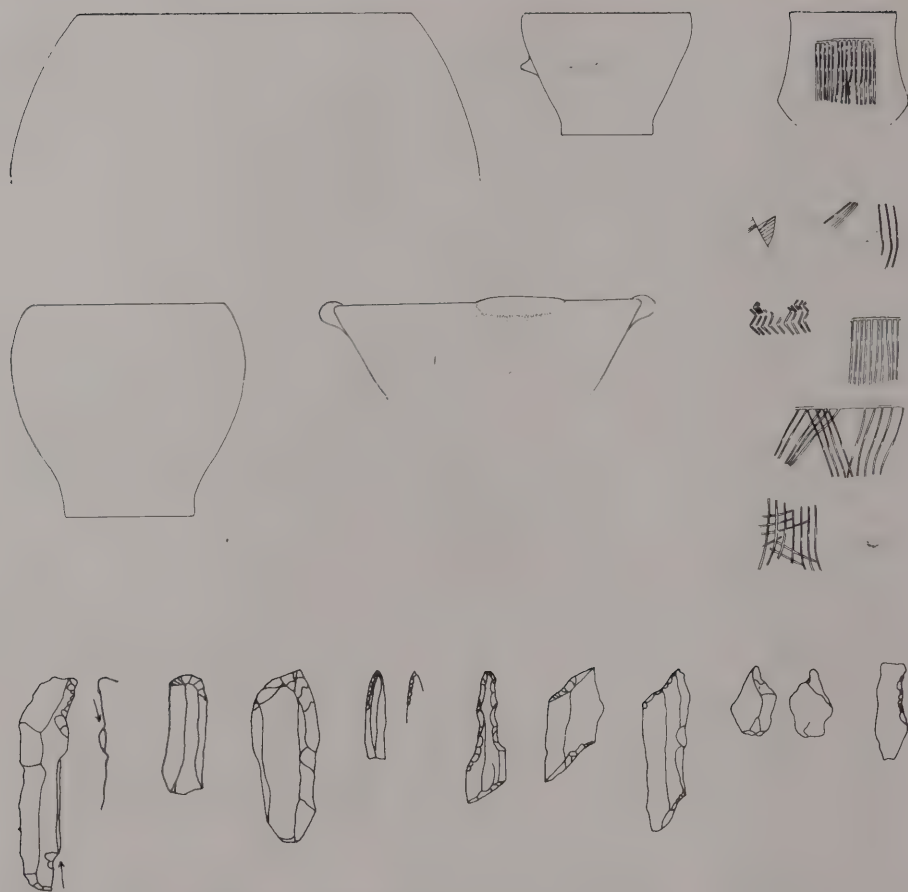


Fig. 5 Pottery and chipped stone industry of the Fagnigola Group. (Scale: pottery 1:5; flintwork 1:2.)

range of decoration. Unpainted 'figulina' pottery is also represented. The chipped stone industry includes burins on a side notch, long end scrapers with steep front, long straight awls, rare trapezes, rhomboids, micro-burins and blades with backed retouch. The polished stone industry is represented by a few large greenstone rings. All settlements consist of so called 'hut floors', pits and wells; the faunal remains include red deer and boar; aurochs is also common while roe deer and beaver are present. The domestic fauna comprises ox, pig and sheep/goat. Fresh water molluscs, turtle and fish are found as well. The only floral material comprises 1 seed of *Triticum dicoccum*.

THE FAGNIGOLA GROUP (Fig. 5)

The only settlement known and partly excavated is the type-site, which is located near one of the small tributaries to the left of the Livenza River, south of Pordenone. The

pottery comprises small cups with slightly restricted mouths, conical cups with tongue lugs, conical cups with rims thickened into lugs, deep oval vessels and carinated beakers decorated with vertical incised motifs. One scratched decorated sherd as well as unpainted 'figulina' ware was also found.

The chipped stone industry includes burins on a side notch, long end and nosed scrapers, long straight awls, rhomboids, microburins and blades with backed retouch. The open site partly excavated revealed the existence of some pits of different shapes. The faunal remains are composed of boar, a small aurochs and caprids.

THE SQUARE-MOUTHED POTTERY CULTURE

As previously noted, the Square-Mouthed Pottery Culture has been recently divided into 3 principal phases ('sensu' Barfield); the name of the Culture is derived from the shape of the vessel openings. The early phase (Fig. 6) is known from Liguria, Piedmont, Lombardy, the Veneto, Trentino and Emilia regions. The fine pottery forms include long-necked square-mouthed 'beakers', double handled flasks, bowls with knobbed lugs placed on the rims, high pedestal vessels and rare hemispherical bowls. The fine ware decoration consists largely of scratched ladder, hour-glass, triangle and tree motifs. The coarse pottery includes bucket shaped square-mouthed vessels decorated with bands of incised lines as well as large vessels with circular mouths decorated with stab and drag motifs; double handled unpainted figulina flasks also occur in the range of pottery forms. The chipped stone industry of the early phase is characterised principally by long end scrapers, backed blades with utilisation marks on the opposite edges (sickle blades?), monofacial or bifacial arrowheads produced by flat pressure retouch on blades and long foliate side scrapers. The polished stone industry contains numerous large greenstone axes.

Certain new elements occur in the fine pottery of the middle phase of the Culture (Fig. 7), such as the appearance of large square-mouthed bowls decorated with dynamic incised and cut out motifs, hemispherical bowls with rounded rims and forms (lids and small bowls) decorated with excised motifs. For the most part, the excised motifs consist of triangles, bars and meanders and recurring spirals. The coarse pottery forms remain the same as for the preceding phase, however, the polished stone industry is enriched by the presence of Hilkenstein-type chisels. The late phase of the Square-Mouthed Pottery Culture (Fig. 8), distributed in eastern Lombardy, the Veneto and Trentino, is characterised by deep bowls with 4 corner spouts decorated with herring-bone, triangles, small reed and point impressions below the rim.

Other common forms include round-mouth bowls and flasks with small handles placed on the lower body. The coarse pottery commonly includes large vases decorated with finger impressed applique cordons located just below the rim or on the body. Spindle whorls also occur in this phase of the Culture. The chipped stone industry has some new forms including burins on retouched edges, small heart-shaped bifacial points, leaf-shaped points, double pointed leaf-shaped points, ogival foliates and trapezoidal transverse arrowheads. The polished stone industry comprises small trapezoidal green-

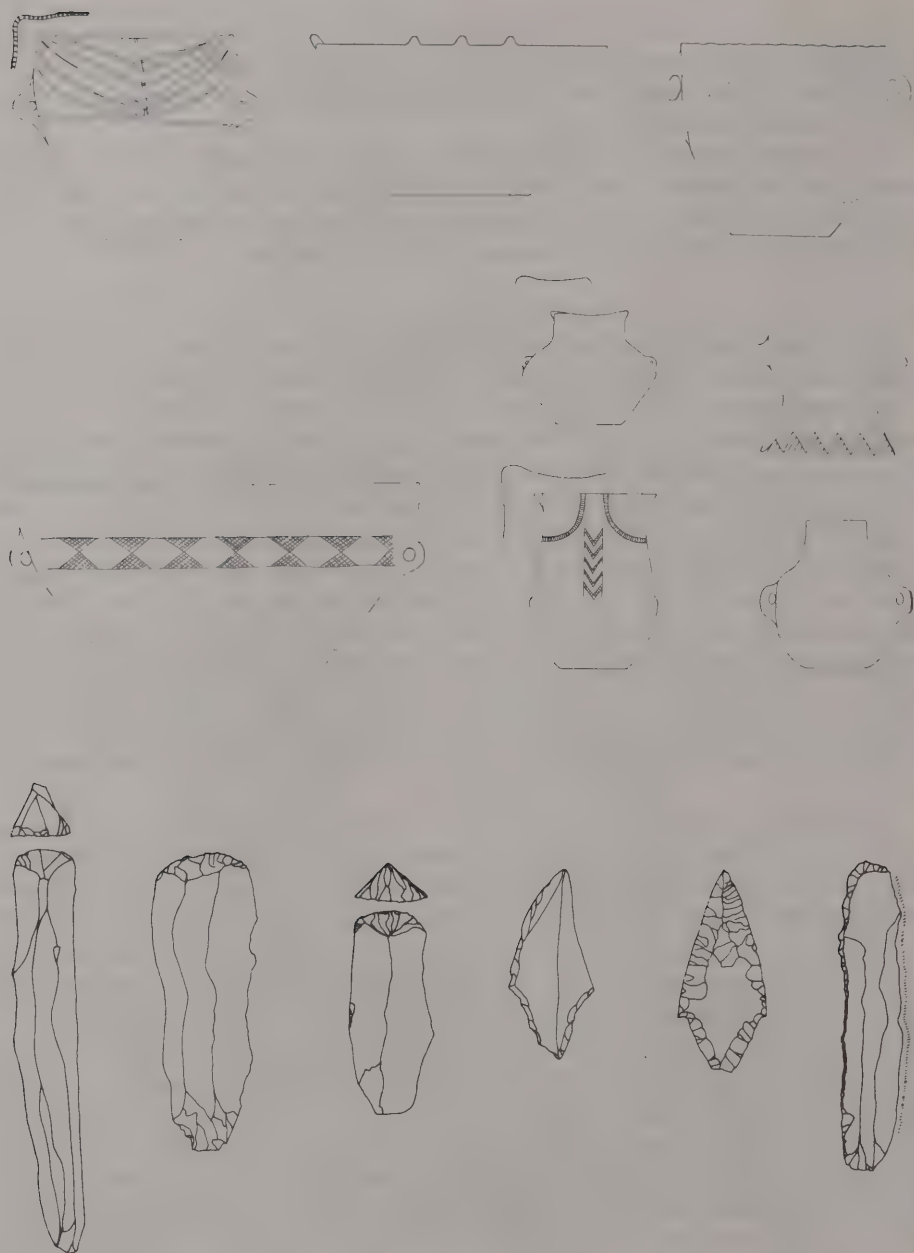


Fig. 6 Pottery and chipped stone industry of the early phase of the Square-Mouthed Pottery Culture. (Scale: pottery 1:5; flintwork 1:2.)

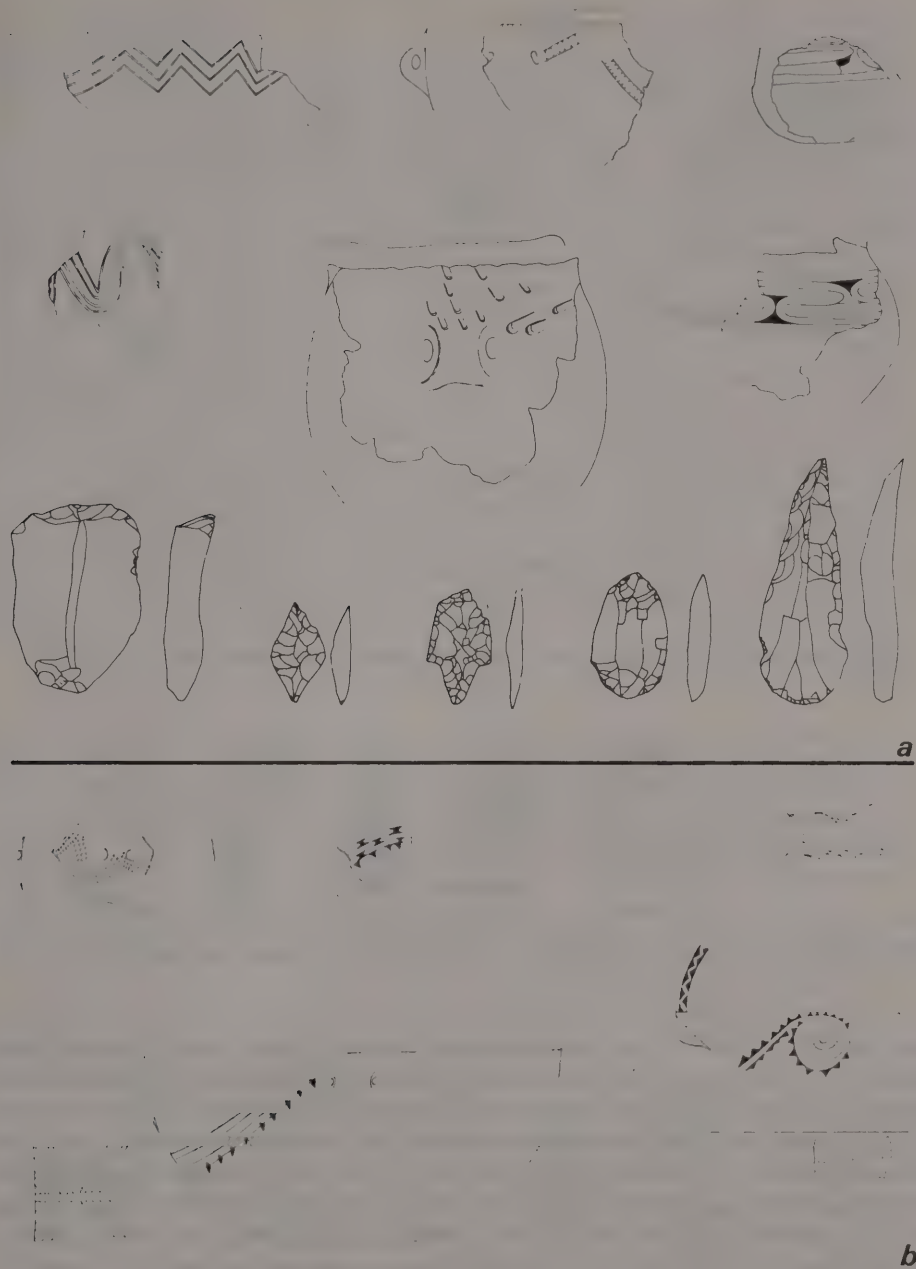


Fig 7 Pottery and chipped stone industry of the middle phase of the Square-Mouthed Pottery Culture (a) from Campegine, (b) from Pescale. (Scale: pottery 1:5; flintwork 1:2.)

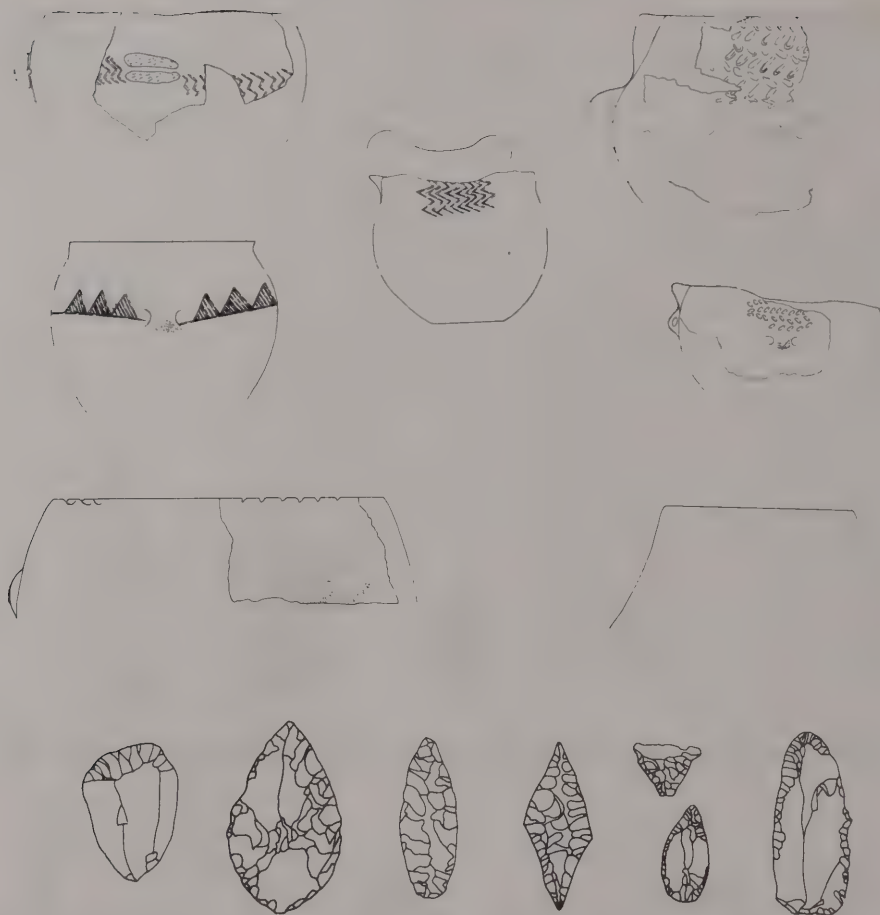


Fig. 8 Pottery and chipped stone industry of the late phase of the Square-Mouthed Pottery Culture. (Scale: pottery 1:5; flintwork 1:2.)

stone axes. All phases of the Square-Mouthed Pottery Culture have cylindrical loom weights, clay figurines and clay stamp seals (*pintaderas*). The settlement types are varied: cave sites, open sites with huts, shelters near large rivers and even small lake-side villages; in the late phase many sites are situated on naturally fortified hills overlooking rivers. The economic pattern is extremely varied according to the local habitat. Evidence of the relationships with central Europe appears in the early phase in the form of certain 'stichband' sherds, in the middle phase by presence of a Hilkenstein shoe last adze and in the late phase contact is revealed by Aichbühl sherds. Relationships with Danilo seem to have been fairly strong during the middle phase. The duration of all 3 phases of the Square-Mouthed Pottery Culture seems to have occupied the entire fourth millennium bc.

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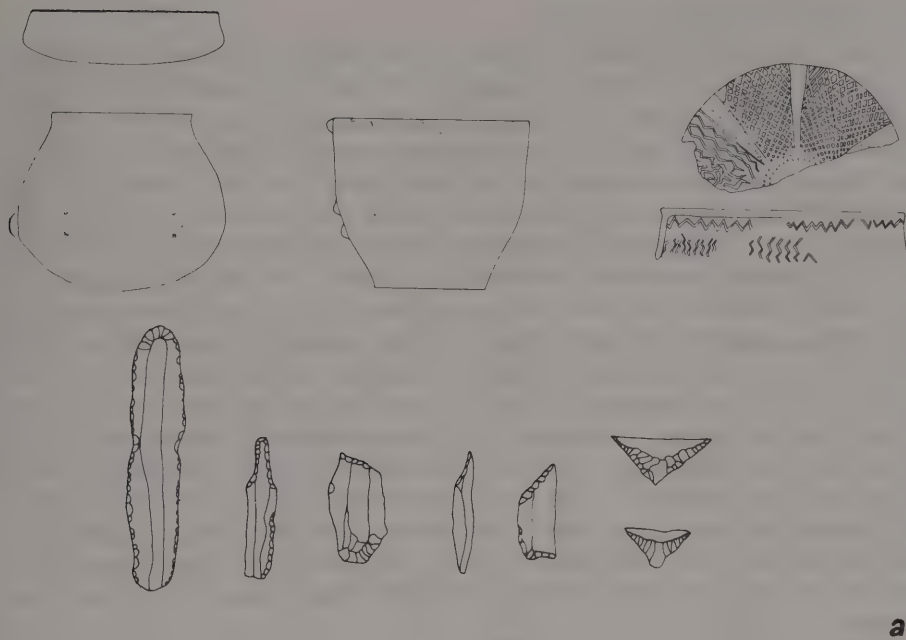


Fig. 9 (a) Pottery and chipped stone industry of the Lagozza Culture; (b) Pottery and chipped stone industry of the Chassey B Culture. (Scale: pottery 1:5; flintwork 1:2.)

THE LAGOZZA CULTURE (Fig. 9a)

The Lagozza Culture takes its name from the palafitta settlement of Lagozza di Besnate in Lombardy. Settlements belonging to this Culture are found in Lombardy, the Veneto and Emilia. The dark polished fine ware includes globular jars with vertically pierced lugs, carinated bowls which sometimes have suspension holes on the inside of the vessels, incised and cane impressed lids and plates with flared rims. Among the coarse pottery one finds small truncated cone vessels covered with numerous lugs on the middle and upper parts of the vessels. The ceramic industry also includes kidney shaped loom weights and spindle whorls richly decorated with incised lines and dots. The chipped stone industry includes transverse arrowheads, foliate triangles and trapezes and large blades with marginal bifacial foliate retouch. Pebbles incised with geometric net designs are also characteristics. At least one example of a fine bone comb is known from the bone industry. Most of the settlements are of the palafitta type, but cave and other open settlements are also present; for instance, the Pescale settlement is situated on a natural fortified hill at the confluence of 2 rivers. The subsistence pattern was mixed, based in part on hunting and gathering as well as on cultivated wheat, barley and flax. In Liguria and north-western Tuscany an eastern stream of the Chassey B Culture characterises the Late Neolithic (Fig. 9b). The majority of the C14 dates of the Lagozza material fall within the first half of the third millennium bc which helps to define the Culture as Late Neolithic.

THE DIANA CULTURE (Fig. 10)

A few sites belonging to the Diana Culture have been partly excavated in Eastern Romagna in the recent years. Other material discovered in previous research comes from the settlement of Panighina. The red polished fine ware includes deep conical and hemispherical bowls with trumpet flaring lugs perched on the rim, conical cups with saddled handles and globular jars with vertical trumpet lugs. The coarse ware is represented by large hemispherical bowls with finger impressions below the rim and jars with stab and drag finger decoration. Linear incised as well as scratched net motifs also occur in the range of decoration.

The chipped stone industry includes long end scrapers, flat retouched side scrapers and micro-burins.

The faunal remains indicate an economy based on domestication even if no detailed study on the bone material has been carried out as yet.

Part III***Current problems***

The more recent research on the Neolithic Cultures of Northern Italy has brought to light the following problems:

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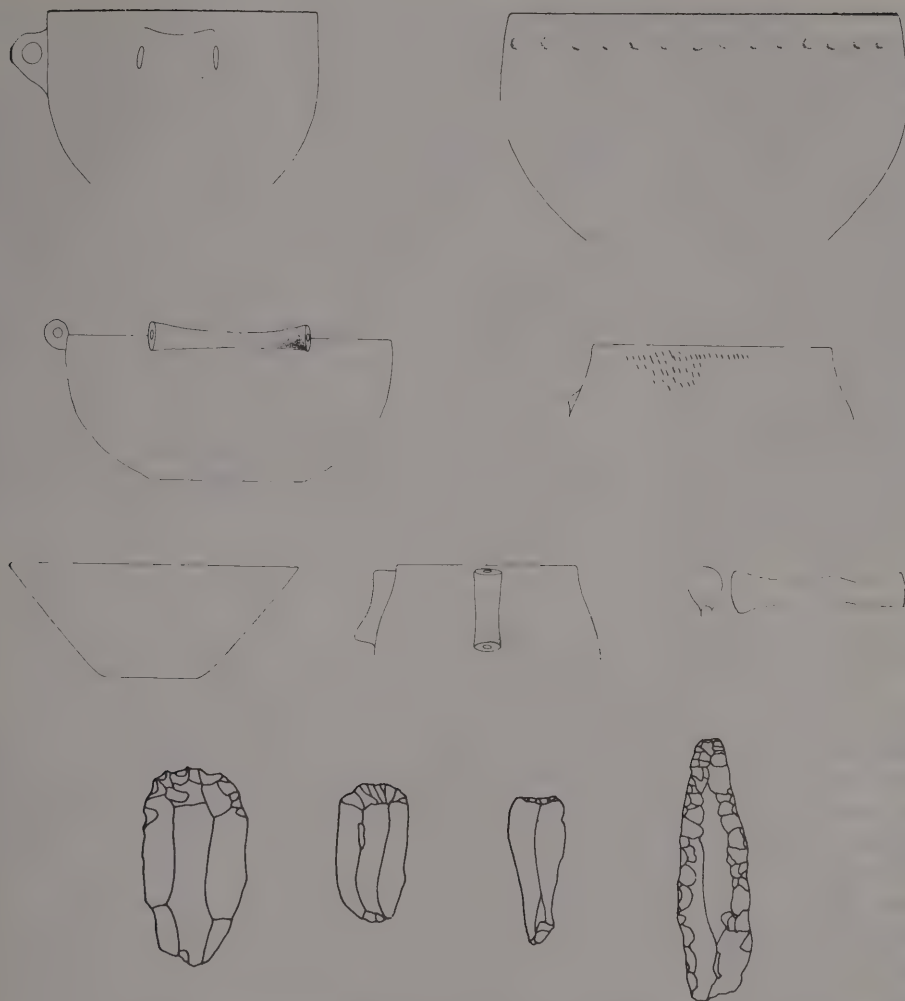


Fig. 10 Pottery and chipped stone industry of the Diana Culture. (Scale: pottery 1:5; flintwork 1:2.)

(1) *The relationships between the local Mesolithic 'substratum' and the oldest ceramic facies*

The problem currently involves the whole area under examination. Liguria lacks the Mesolithic horizon with trapezes which are well known from nearby Provence where the evolutionary continuity between the Castelnovian Mesolithic and the Cardial Neolithic chipped stone industry is documented. From the beginning of its appearance the Ligurian Impressed Ware Culture seems to be closely related to the Provence material as well as including notable, if generic, Mesolithic characteristics in its chipped stone industry.

However, Liguria does not presently contain evidence for a complete picture of the evolution between the local Mesolithic and the Early Neolithic given that the only Mesolithic assemblages known are those with lunates and triangles and thus earlier with respect to other Mesolithic assemblages. There exists therefore a gap between the latest Mesolithic and the earliest Neolithic layers which is probably more a reflection of our present knowledge than of the actual stratigraphic situation. In the Adige Valley the earliest pottery, belonging to the Gaban Group, is found in stratigraphic continuity and associated with the chipped stone industries which are typical of the local Mesolithic 'substratum'. In turn, the evolution of the local Mesolithic industries which range from complexes with triangles to complexes with trapezes and denticulated blades which also appear in the earliest ceramic facies has been documented in detail. Recent finds suggest the presence of Mesolithic trapeze complexes even in the Po Plain from which the Fiorano Culture and the Vhò Group might have developed. The problem of the relationships between the early ceramic facies of the Trieste Karst, which is preceded by Mesolithic assemblages with trapezes and denticulated blades, and the Impressed Ware Culture of Istria and the Dalmatian islands, which have genuine Mesolithic features in the chipped stone industry, remains unsolved.

(2) The relationships between the various facies of the Early Neolithic of northern Italy

At the present, one of the greatest problems is our uncertainty about the nature of the various aspects of the Early Neolithic in the Po Valley and its neighbouring regions. In addition to the Late Mesolithic trapeze complexes already known from the Trentino and Karst regions, we have now comparable material from the Veneto-Lombardy pre-Alps, the Berici Hills and the Emilia-Tuscany Apennines, all of which attest to a wide-spread diffusion in northern Italy of the most recent Mesolithic Cultures. Yet the Early Neolithic of the Po Valley is that of the Fiorano Culture and Vhò Group which fit into a more recent phase of the Early Neolithic. The Fiorano Culture displays cultural connections with the recent Impressed Ware facies of Liguria and with the central Italian Cultures of Sasso and Ripoli and finally with the recent aspects of the Early Neolithic of the Adige Valley. Furthermore, mostly on account of the study of the nearly identical lithic assemblage, the Fiorano Culture is now considered more or less contemporary with the Vhò and Fagnigola Groups. As regards the Liguria region, at the end of the Impressed Ware Culture, influence of the Fiorano Culture existed in that area as well as influence of the coastal Impressed Ware existed in the Fiorano settlements of the Po Plain. To summarise to this point, the most outstanding problems are: the discovery of Early Neolithic layers in the Adige Valley and the definition of the Gaban Group; the identification and characterisation of the gradually expanding relationships between all of the above facies with the Early Neolithic of the Adige Valley and the Sasso and Ripoli Cultures of peninsular Italy; the definition of the Early Neolithic cultural Groups of Vhò and Fagnigola in the Plain.

(3) Problems concerning the diffusion of the Square-Mouthed Pottery Culture

The beginning of the Middle Neolithic in northern Italy coincides with the diffusion of the Square-Mouthed Pottery Culture which eventually occupied virtually all of northern Italy. With the arrival of the Square-Mouthed Pottery Culture, almost all of the traces of Mesolithic tradition which had existed in the previous ceramic cultures were obliterated. At present it is difficult to define the circumstances regarding the genesis and the original diffusion of the Square-Mouthed Pottery Culture. However, the Square-Mouthed Pottery Culture can be regarded as an autonomous and original product of northern Italy whose development has certainly been influenced by a few contributions but not in such a fashion as to weaken the substantial independence of the local Culture. The relationships between the Square-Mouthed Pottery Culture and the preceding and coeval cultures are of particular interest. In the east-central area of the Po Valley such contacts with earlier cultures seem to have been limited to certain rare ceramic types of mixed characteristics. The typical Early Neolithic lithic industry was replaced radically by industries characterised by flat retouch and projectile points, while the polished stone industry was marked by an increase in objects especially axes.

In Liguria such evidence of contacts are particularly fraught with implications: for example typical scratched geometric motifs of the following Culture are already present in the Late Impressed Ware Culture. In this regard it is also interesting to note that scratched motifs are present in the Adige Valley Gaban Group before the appearance of the Square-Mouthed Pottery Culture; the same phenomenon occurs in the Vhò and Fagnigola Groups too.

Even though one must not underestimate the clear differences between the Ligurian and Po Valley Finale-Quinzano phase, there is nonetheless no reason not to consider the 2 local developments as mostly chronologically contemporaneous.

In later moments of the Middle Neolithic, all of northern Italy continued to be enveloped in the evolution of the facies of the Square-Mouthed Pottery Culture characterised by the diffusion of excised spiral and bar and spiral motifs. It has recently been shown that the decorative technique and the motifs reached Liguria as well as the Po Plain. The ultimate establishment of cut out motifs highlights the issue of the nature of the cultural contacts with the Balkan area occupied by the Danilo Culture. At present it is not possible to estimate the temporal duration of this phenomenon; however the fact remains that the diffusion of excised spiral motifs permits us to follow the development of a definite stage of the Square-Mouthed Pottery Culture.

(4) Problems related to the diffusion of the Chassey and Lagozza Cultures in northern Italy

On account of the recent demonstration of the non-existence of the so called 'Pescale Culture' whose material is to be divided into 2 well distinguishable assemblages, the first belonging to the end of the middle phase of the Square-Mouthed Pottery Culture and the second to the Lagozza Culture, we know now that the Square-Mouthed Pottery facies characterised by excised meander and spiral motifs seems to have been the stage of

most widespread unity within the various environments of northern Italy. The disintegration of basic unity, marked by the appearance of the Chassey Culture in Liguria and by Lagozza Culture in the west-central Po Valley, characterises the Late Neolithic of the area. The diffusion of such 'western' facies produced as a consequence a diminution of the area occupied by the Square-Mouthed Pottery Culture which remained only in the Veneto, Trentino and Eastern Lombardy.

The arrival in Liguria of a Chassey facies marked the end of the Square-Mouthed Pottery Culture at the time of the last manifestations of cut-out decoration. The Chassey facies penetrated into Tuscany via Liguria, where it was combined with northern Apennine elements along with a 'western' chipped stone industry characterised by transverse arrowheads and foliate triangles.

The Lagozza influences were particularly active in the late aspect of the Square-Mouthed Pottery (Rivoli-Castelnuovo) phase; thus one frequently finds Lagozza elements in the ceramics as well as in the presence of 'western' chipped stone types such as the flat transverse arrowheads. These 'western' types are introduced into a lithic repertoire which, as evidenced by the appearance of new foliate 'hand-axes' and ogival shaped projectile points, displays a clear evolutionary continuity with the preceding phase of the Square-Mouthed Pottery Culture. The problem of the relationships between the Lagozza Culture, the Chassey Culture and both above with the trans-Alpine Cortaillod Culture is still open; however, as previously stated, we strongly suspect that the full development of the Lagozza Culture belongs to a late stage. Certain evidence seems particularly significant in this regard: the presence in Liguria of the middle phase of the Square-Mouthed Pottery Culture which preceded the diffusion of Lagozza elements occurred primarily in the most recent Square-Mouthed Pottery settlements, and finally, the lithic industries of the most recent Square-Mouthed Pottery phase display strong analogies with the industries of the Swiss Cortaillod II.

(5) Problems related to the Late Neolithic period in northern Italy

The cultural picture of northern Italy at the end of the Neolithic appears to be largely characterised by 2 factors: in the first place there was the progressive disintegration of the remaining Square-Mouthed Pottery Culture area and in second place we find the penetration of the Lagozza facies into the eastern Veneto region and thence into the Karst area where it joined with various Balkan influences. The Lagozza penetration also reached the Emilia region, while Romagna was occupied by Diana type influences by way of the Adriatic coast. The Lagozza-Chassey expansion was even quite active south of the Apennine border in Tuscany and further south into the Marche and Umbria regions where again one finds a mixture of Lagozza-Chassey and Diana elements.

Thus it appears that the late Neolithic was an era of considerable cultural dynamism involving influxes which spread throughout northern Italy in many complex ways. Indeed the most pressing problems at the present involve the evaluation and characterisation of these various components both in limited regions and in their totality.

(6) General problems

The picture of the Neolithic of northern Italy does not present a generally homogeneous cultural situation. The geographic diversity of the region undoubtedly played a significant role in the creation of cultural provinces which from time to time were separated or linked in complex ways by reciprocal and/or external influences. During the Early Neolithic, Liguria and partly the western pre-Alpine area were clearly differentiated from the rest of northern Italy by virtue of their contacts with the Impressed Ware Mediterranean Cultures. With the end of the Square-Mouthed Pottery Culture at the onset of the Late Neolithic, Liguria found itself open to western influences and acted as an intermediary between the Chassey area and the north-central areas of the Italian peninsula; while the Po Plain offers a more complex set of problems because of the survival of the last stage of the Square-Mouthed Pottery Culture in the Veneto and the presence of the Diana Culture in some settlements of the Romagna region, in the same period in which the Lagozza Culture was spreading eastwards from western Lombardy.

The geographic boundaries of various culture areas are frequently rendered problematical owing to the vast gaps in our knowledge; for instance, the western Po-Alpine area, the eastern Veneto and to a certain extent the Po Valley during the whole Neolithic are not very clear. The chronological relationships between the Neolithic of northern Italy and the rest of Europe are sometimes difficult to define because of the scarcity of the data. However, some relationships seem valid; in particular the presence of Danilo influences, moving westwards during the middle phase of the Square-Mouthed Pottery Culture. In addition there are the contacts between the central European Stroke Pottery and the early phase of the Square-Mouthed Pottery Culture, the tight affinity between the Ligurian Late Neolithic and the Chassey B of Provence, the multiple relationships between Lagozza, Cortaillod II and the Late Square-Mouthed Pottery phase and finally the presence of sherds of the South German Aichbühl Culture in the Late Neolithic settlement of Rivoli.

The authors are very grateful to Dr Daniel Evett of the Department of Anthropology of the Wayne State University (Detroit – USA) who translated this article.

Abstract

This article presents a synthesis of our knowledge of the Neolithic of Northern Italy as well as a discussion of the problems raised by most recent researches in this area. After a short history of the contributions given in the last 30 years by P. Laviosa Zambotti, L. Bernabò Brea, F. Malavolti and L. H. Barfield, the Authors describe the Neolithic Cultures known today in Northern Italy.

The Impressed Ware Culture, the Gaban Group, the Fiorano Culture and the Fagnigola and Vhò Groups are referred to the Early Neolithic; the Middle Neolithic begins with the appearance of the Square-Mouthed Pottery Culture both in Liguria and the Veneto regions. The late phase of the Square-Mouthed Pottery Culture characterises only the Veneto, whilst most of the area under study is covered by the Lagozza Culture

during the third millennium bc. An eastern stream of the Chassey B Culture is present in Liguria when the Diana Culture, spreading northwards, covers a small area of the Romagna region.

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Coinage and Currency

by RICHARD REECE

This paper consists of two rather separate parts. Both are concerned with Roman coins and their use and distribution as currency, but whereas the first is a practical survey of some Museum and Excavation collections in the Danube provinces, the second is a survey of recent foreign and British research and thoughts on one particular problem, the late third century. This problem is noted in Part I as one of the main subjects worthy of special research on the ground, to gather together information on coin finds over a large area so that we can understand the effects on coin use and coin loss of the reforms of Aurelian and Diocletian. To this programme of research Part II may act as a useful introduction by summarising what is at present thought about the theoretical aspects of these reforms. As the two subjects are treated separately the relevant bibliographies will be found at the end of each section.

Roman coins in Eastern Europe: Histria, Plovdiv and Burgas

Any attempt made from England to study the circulation of Roman coins in the Danube provinces and the Black Sea coast of the Roman Empire must be doomed to failure. This section has the much more restricted aim of putting on record in English some data on coins in the Museums of Plovdiv and Burgas (Bulgaria – see map) which I collected during a short visit to Bulgaria as a guest of the Bulgarian Academy of Sciences. To these data I have added a brief summary of the excellent volume of coin finds from *Histria* (Romania – see map) – published by Preda and Nubar in 1973.

The 3 groups of coins have very different histories. The museum at Plovdiv (ancient *Philippopolis*) contains materials from the town and from the surrounding area. To try to establish a reasonably accurate picture I divided material from the accessions register into 4 groups – finds from Plovdiv handed in between 1909–1918 and 1918–28, finds from the surrounding area handed in between 1919 and 1928, and all finds from 1929 to 1958. Within the 4 groups there are minor variations but the overall picture is encouragingly uniform. As hoards and collectors' material were excluded in making the lists we may have something approaching a true picture of coin loss in the area. Set back from the Danube frontier, in the Thracian plain, the settlement which began on a central rock in the second millennium BC expanded to a Thracian centre before becoming a centre of Roman communications. Its history in the later Empire is difficult to follow in detail but the settlement returned to its central rock in the sixth century AD when it was fortified under Justinian.



The museum at Burgas holds material from many settlements and cities along the Black Sea coast, chief amongst which are Nessebur (ancient *Messembria*) and Sozopol (ancient *Apollonia*). The coastal line of cities and trading posts was established partly by Greek colonists so that the early coinage consists mainly of autonomous coinage struck by the cities themselves, and imports from Macedon and the Greek homeland. Roman coinage continues the pattern set in the Hellenistic period and follows through to the sixth century when many of the cities received their last fortifications. At Nessebur in particular the great gateway is a vivid memorial to the building activities which followed Justinian's dreams of a restored Empire. Due to the number of find spots for coins in the Burgas museum it was not practicable to organise the material by sites and I have therefore divided the coins into 2 main groups – the first being the earlier accessions (Nos 1 to 853), the second, the later (854–1995). As at Plovdiv there are differences between the groups – but the similarities outweigh them.

The material at *Histria* comprises some 2,049 coins from the fourth century BC to the twelfth century AD. The bulk of the coinage lies around 3 main foci – the third

century BC, the early third century AD and the sixth century AD. The first period is a time of economic prosperity and expansion, the second a time of military crisis, and the third a time of reconquest. The coins of the Roman Imperial rule have been summarised in the table and they provide an interesting group for comparison with the Bulgarian sites. The coins include general site finds as well as excavated material from the exploration of the site between 1914 and 1970. The number of coins of Justinian is so great — over 30% of the total of Roman coins — that it has been omitted in calculating the percentage of Roman coins in each period.

The tables are divided in rows into the usual chronological periods (Reece, 1973), and into 4 columns, where applicable, for each group. In the columns 'Greek' bronze includes all issues not from the central Imperial mints such as the Greek Imperial Autonomous issues of *Histria*, *Tomis* and *Philippopolis* as well as the colonial issues (in Latin) of *Deultum* and *Viminacium*. Coins from the Imperial latin mints have been divided into gold, silver and 'bronze', the latter including silvered bronze at several periods.

The most obvious point to be drawn from the tables is the importance of locally produced copper coins in the second and early third centuries. There is little Roman coinage before 69 and what there is is mainly Imperial Bronze. A detailed study of excavated material layer by layer could tell us how much Hellenistic coinage remained in use in the first century but this information is not available. Imperial silver of the first and second centuries seems to be more common on the Black Sea coast than inland at Plovdiv but it is interesting to note that this is not accompanied by any of the 'Greek' silver issues for the eastern Mediterranean, such as *Lycia* or *Caesaraea in Cappadocia*. Plovdiv seems to have very few coins of the fourth century but all groups except *Histria* show a selection of fifth century gold which might well have reached the cities from the barbarians either side of the Danube rather than direct from the Roman administration. All groups have *folles* and fractions of Anastasius, Justin and Justinian, though it seems possible that most of these arrived only with Justinian's armies. After coins of *Heraclius* there is the inevitable gap identical on Malta, at Benghazi, Crete and *Histria* until the anonymous issues of the time of John I c. AD 970.

It seems useful to end these notes with a brief mention of the information contained in the *Histria* coin report and some thoughts on further work. The early part of the lists concerning the 'Greek' autonomous issues has been discussed by Gh Poenaru Bordea (1974) in a detailed review (in Romanian); a further discussion was published by H Nubar (1963) — in Italian — before the main work appeared. The list of coins is divided into 2 main sections as is the discussion, and in each case the Greek section is by Preda, the Roman and Byzantine by Nubar. The inventory list is a joy to behold, with full references to *BMC*, *RIC*, *Cohen* and *Late Roman Bronze Coinage*. Mint marks are usually given in full with general find spot, date, and present whereabouts. This means that a group of provenanced site finds are available for use in as much detail as any researcher could reasonably expect, and we must be extremely grateful to Nubar for this excellent work.

TABLE 1

| AD | Plovdiv 1909-18 (a) | | Plovdiv 1919-28 (b) | | Plovdiv Area 1919-28 (c) | | Plovdiv & Area 1929-58 (d) | | Burgas 1-853 (e) | | Burgas 854-1995 (f) | | Histria | |
|---------|------------------------|----------|------------------------|-------|-----------------------------|-------|-------------------------------|----------|---------------------|----------|------------------------|----------|---------|-------|
| | Greek | Roman | Greek | Roman | Greek | Roman | Greek | Roman | Greek | Roman | Greek | Roman | Greek | Roman |
| | AE | AV AR AE | AE | AE | AE | AV AE | AE | AV AR AE | AE | AV AR AE | AE | AV AR AE | AE | AR AE |
| to 14 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 14-41 | 1 | - | - | - | - | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 4 |
| 41-54 | 2 | - | - | - | - | - | 1 | 3 | - | - | 2 | - | 2 | - |
| 54-68 | 1 | - | - | - | - | - | 1 | 2 | 1 | - | - | 1 | 1 | - |
| 69-96 | 1 | - | - | - | - | 1 | 5 | - | - | - | - | - | - | - |
| 96-117 | 1 | - | - | - | - | 2 | 2 | 2 | 2 | - | - | - | - | - |
| 117-138 | - | - | - | - | - | 2 | 2 | 1 | 1 | - | - | - | - | 3 |
| 138-161 | 6 | 1 | - | - | - | - | 15 | 6 | 1 | - | - | - | 4 | 2 |
| 161-180 | 9 | - | - | - | - | - | 12 | 2 | 2 | - | - | - | 3 | 10 |
| 180-192 | 6 | - | - | - | - | - | 1 | 1 | - | - | - | - | 1 | 9 |
| 193-222 | 67 | - | - | - | - | - | 79 | 1 | 1 | - | - | - | 3 | 1 |
| 222-238 | 17 | - | - | - | - | - | 13 | 3 | 5 | - | - | - | 16 | 5 |
| 238-259 | 23 | - | - | - | - | - | 16 | 6 | 18 | - | - | - | 21 | 1 |
| 259-275 | - | - | - | - | - | - | - | 6 | 18 | - | - | - | 11 | 14 |
| 275-294 | - | - | - | - | - | - | - | 1 | 2 | - | - | 1 | 9 | 5 |
| 294-317 | - | - | - | - | - | - | - | 3 | 11 | - | - | 10 | 3 | 2 |
| 317-330 | 1 | 3 | - | - | - | 1 | 17 | 19 | 3 | - | - | 23 | 63 | 1 |
| 330-348 | - | - | - | - | - | - | 8 | 14 | 7 | - | - | 22 | 38 | 9 |
| 348-364 | - | - | - | - | - | - | 2 | 7 | 5 | - | - | 18 | 60 | 3 |
| 364-378 | - | - | - | - | - | - | 3 | 2 | 2 | - | - | 5 | 27 | 7 |
| 378-402 | - | - | - | - | - | - | 1 | 3 | 2 | - | - | - | 23 | 2 |
| 402-455 | 4 | 1 | - | - | - | 1 | 1 | 2 | 2 | - | - | - | 3 | 30 |
| 455-488 | 4 | - | - | - | - | 2 | 1 | 5 | 3 | - | - | - | 5 | 1 |
| 6th C. | 3 | - | - | - | - | 1 | - | 1 | 1 | - | - | 3 | 16 | 2 |
| | 2 | - | - | - | - | 2 | 21 | 14 | 14 | - | - | 9 | 2 | 361 |

COINAGE AND CURRENCY

TABLE 2

| | Plovdiv % | | c | d | Burgas % | | Total Percentages | | |
|---------|-----------|----|----|----|----------|----|-------------------|--------|---------|
| | a | b | | | e | f | Plovdiv | Burgas | Histria |
| AD | | | | | | | | | |
| to 14 | — | — | — | 1 | 1 | 2 | 1 | 1 | 1 |
| 14-41 | 1 | — | 1 | 1 | — | 1 | 1 | 1 | 1 |
| 41-54 | 2 | — | — | 1 | 2 | 1 | 1 | 1 | 1 |
| 54-68 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | — |
| 69-96 | 1 | 2 | 7 | 3 | 4 | 1 | 3 | 3 | 1 |
| 96-117 | 1 | 4 | 4 | 5 | 4 | 6 | 4 | 5 | 2 |
| 117-138 | — | 1 | 2 | 2 | 3 | 2 | 1 | 3 | 2 |
| 138-161 | 4 | 4 | 2 | 8 | 5 | 7 | 6 | 6 | 3 |
| 161-180 | 5 | 5 | 1 | 4 | 4 | 4 | 4 | 4 | 1 |
| 180-192 | 4 | 7 | 4 | 1 | 2 | 2 | 3 | 2 | 4 |
| 193-222 | 44 | 45 | 43 | 33 | 19 | 12 | 38 | 15 | 16 |
| 222-238 | 12 | 4 | 9 | 5 | 5 | 5 | 7 | 5 | 5 |
| 238-259 | 16 | 27 | 15 | 10 | 13 | 11 | 14 | 12 | 5 |
| 259-275 | — | — | 1 | 1 | 1 | 4 | 1 | 3 | 6 |
| 275-294 | — | — | — | 1 | 5 | 4 | 1 | 4 | 12 |
| 294-317 | 2 | — | — | 6 | 9 | 10 | 3 | 10 | 7 |
| 317-330 | 1 | — | 1 | 3 | 6 | 9 | 2 | 7 | 12 |
| 330-348 | — | — | — | 1 | 3 | 7 | 1 | 5 | 5 |
| 348-364 | — | — | — | 1 | 1 | 2 | 1 | 1 | 4 |
| 364-378 | — | — | — | 1 | 2 | 1 | 1 | 1 | 5 |
| 378-402 | 3 | — | — | 1 | 2 | 1 | 1 | 2 | 4 |
| 402-455 | 2 | — | 1 | 1 | — | 1 | 1 | 1 | 4 |
| 455-498 | 2 | — | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6th. C. | 1 | — | 3 | 8 | 7 | 4 | 5 | 5 | * |

The work does not finish as a mere list, however, it goes on to tabulate the coins reign by reign, sometimes year by year giving an index of 'coins per year'. Thus we can follow the 'coefficient' from 0.13 (coins per year) under Tiberius up to a peak of 6.25 under Caracalla, a nadir of 0.28 from 253-260 and another peak of around 13 in 295-6. After this coinage remains at a fairly high level, 1-3 coins per year, until 340 and then the story is mainly one of decline. After an almost complete lack of coins from Attila and the Huns (c. 450's) to Anastasius (498) the index rises giving a coefficient of 9 coins per year under Justin II (565-578) a peak mirrored by general coins finds from the area of the Dobrogea and the Athenian Agora! Imperial and local issues are also tabulated reign by reign as, for the later Empire, are mints. All the work has been done and we are presented with data which it is up to us to use.

To end with questions which need answering is in no way to deny the work that has been done in Bulgaria and Romania, just the reverse, because work is in progress, and there is so much material, so many questions spring to mind. First, it would be excellent to investigate the entry of Roman coinage into a part of the Empire which was using coinage before The City herself and which always remained on the border both of the Empire and its currency circulation. A second point, which is perhaps a unique opportunity, is the chance to study the minting and circulation of Colonial and Autonomous Greek Imperial issues in a relatively restricted yet homogenous setting, against the background of military crises. The change in supply and circulation from Severus to Diocletian, with the implications of the newly constructed Tetrarchic mint

system, needs study, as does the effect of the economically unreasonable decision of Constantine to establish a new mint at Constantinople in the middle of an area already well supplied (Heraclea, Cyzicus, Nicomedia). Was a system of supply established between 294 and 326, and how did the opening of Constantinople change the pattern? In the later fourth century the problems of military pay and the supply of gold to invading tribal groups begins and this is obviously one of the major points for research in the fourth century. Finally there is the sixth century in which the re-emergence and fall of Byzantine power on the Danube might be used to calibrate the supply, use and loss of coin by an army.

These thoughts could never have reached publication without the work of H. Nubar, our numismatic colleagues in Romania, especially Gh Poenaru Bordea, and in Bulgaria Madame Y. Youroukova (Sofia), K. Kolef (Plovdiv) and M. Karaïotov (Burgas). To all these, to the British Academy and the Bulgarian Academy of Sciences who gave me the opportunity to travel, I give my best thanks.

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|---|------|---|
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The coinage reforms of Aurelian and Diocletian

The general picture of the Roman Empire in the third century AD is one of chaos. It is always assumed that the great inflation, which can be traced both from written sources and from the collapse of the silver coinage, aggravated the military and political disruption to such an extent that the Empire all but fell. It needs to be repeated many times that there is little archaeological evidence which actually necessitates such a gloomy view; but such repetition is fruitless without a considerable amount of archaeological synthesis far beyond the bounds of this paper.

Two events at the end of the century, the currency reform of Aurelian in 273–4, and the attempts at complete economic reform of Diocletian from 294 to 301, are usually taken as marks of economic recovery and as such they have to be fully understood before we can hope to fathom the earlier ‘chaos’. In fact it seems very unlikely that either of these reforms were major aspects of recovery. Perhaps we have, paid far too much attention to the word ‘reform’ itself, and the able propaganda of peace and plenty spread by Constantine the Great. Both historical factors enable the historian to forget the archaeological evidence which shows the main copper coin dropping in weight, and probably therefore in value, by a factor of about 6 in the 30 years of Constantine’s reign. This strongly suggests that the chaos of the third century continued into the ‘settled’ years of the fourth.

Such preamble may be taken as suggesting that we now understand these two reforms. We do not; in this century we can hope for no more than further approximation

towards such understanding. Recently however, we have taken a leap forward and it is my purpose here to summarise several recent foreign contributions and to add some suggestions as to the limits within which any final solutions must lie.

The reform of Aurelian

This has recently been made the subject of an excellent survey by Kienast whose work must form the basis for any future advances. Discussion has always centred on the final stages of the reform in which Aurelian produced a coin of *c.* 3.9% silver weighing *c.* 3.5 gm. bearing a bust with a radiate crown on the obverse and the mark XXI or KA on the reverse. In the Roman system of counting XXI could mean a ratio of 20 to 1, or simply 21, and the same applies in Greek to KA. Callu managed to collect 21 earlier explanations of these numerals; Kienast has reduced the number of reasonable explanations to 12; because most of these are unprovable or rely on archaic units I would reduce the number to 3, of which 2 can be undermined.

1) XXI means that 20 radiate silver coins go to make up 1 gold piece. This immediately runs up against the minor problem that the gold piece of the time seems to have a variable weight and in consequence is ill defined. However, we can take a notional minimum weight of 1/100th of a Roman *libra* (pound of *c.* 327 gm), that is *c.* 3.3 gm. This suggests that 20 radiate pieces weighing 3.5 gm., each containing 3.9% of silver equal more than 3.3 gm. of gold. Allowing 4% of silver we have:

$$\begin{aligned} & 20 \text{ times } 4\% \text{ of } 3.5 \text{ gm of silver} \\ & = 20 \times 4\% \times 3.5 \text{ gm of silver} \\ & = 20 \times 0.14 \text{ gm of silver} \qquad = 2.8 \text{ gm of silver} \end{aligned}$$

It seems most unlikely that in any system of currency silver would be so over-valued as to make it equal to, or worth more than, gold, and the suggestion must therefore be discounted.

2) Cope has suggested that XXI means that 20 *obols* of silver were *included* in each *libra* of base metal alloy from which these silvered bronze coins were made. The *libra* of 12 *unciae* or ounces was usually, in the Roman West, further divided into *scrupula* of which 24 equalled 1 *uncia*. Here Cope proposed that the Greek *obol* should be considered at 48 to the *uncia*. This would give 20 *obols* in a total of 576 *obols* or *c.* 3.4% silver in each coin. If XXI were interpreted as 20 parts of silver added to each *libra* of alloy this would give an even lower percentage of silver. The problem here is that the analyses of coins that Cope quotes all give higher silver values than 3.4%, on average *c.* 3.9%. Everything known about the Roman state and the Roman mint strongly militates against the idea that there would be more silver in the coinage than was advertised; the reverse is likely to be the case. This suggestion should therefore be abandoned.

If we are looking for the weights used then a likely answer is $\frac{1}{2}$ an *uncia* of silver added to a *libra* of base metal — 1 part in 25 — giving a notional figure of 4% silver which agrees well with the analytical average of *c.* 3.9%.

3) This leaves the interpretation according to which XXI denotes 1 radiate piece made up of 20 *sestertii*. In its own right this explanation has little to commend it except that it makes an acceptable progression from the system of c. AD 220. Then a radiate piece of c. 48% silver was equal to 2 *denarii* (perhaps $1\frac{1}{2}$) and was therefore rated at 8 *sestertii*. Allowing for the fall in silver content and the rise in the number of *sestertii* marked, a radiate piece of 20 *sestertii* in 274 seems possible. This interpretation also has the advantage that it can make sense when seen in the light of the Diocletianic reform some 20 years later; perhaps this is the reason why it remains at present the favourite theory.

The reforms of Diocletian

In the years 294–5 Diocletian completely overhauled the production and provision of coinage. The evidence is almost completely archaeological: a new series of denominations appear as site finds and as hoards, coins minted by cities, colonies, and provinces with Greek or Latin legends are no longer seen, the *tetradrachm* which had been struck at Alexandria for 300 years to provide exchange in Egypt alone, disappears, and all mints not only produce similar coins but attach their mint signature to the reverse of them.

The new denominations can easily be described: a gold piece whose weight suggests that 60 are struck to the *libra* of gold, silver of high fineness at 96 to the *libra* of silver alloy, and laureate bronze of c. 10 gm. weight at 32 to the *libra* of bronze alloy. Gold is sometimes marked Ξ at some eastern mints which presumably signifies 60 to the *libra*, in Greek numerals; silver at some western mints has a reverse with only XCVI which fits in with 96 to the *libra*. The laureate bronze, after c. 301, carries the marks XXI or KA, but as these have been the subject of more speculation than the Aurelianic marks they are best left out of account at present. Two smaller denominations exist, a radiate piece of c. 3 gm. weight and a small laureate piece of c. 1.3 gm.; both coins may appear silvered but it is now generally agreed that they have far less than 1% of silver in them. The silver content of the *follis* varies from c. 2.3 to 3.3% of silver from 294 to 301, and a higher value in the East of c. 3.8% and lower in the West of c. 1.9% after 301.

Before setting the coinage against the inscriptions, which add to the problems, it might be useful to suggest some guidelines within which our final results must lie to be credible. One set of limits can be found from the price of wheat which, though variable, is fairly well known, and lies within certain amounts. In general there is a range by which a gold piece at almost any date can buy from 20 to 40 corn measures (*modii*) of wheat. The relationship of gold to silver in the ancient world is also fairly well known, and, in general, gold is always 10 times as valuable as silver, and sometimes a pound of gold may be worth 15 pounds of silver. Most values lie between these limits. Copper is usually valued at one hundredth of a pound of silver.

If we use the price of wheat in the Maximum Price Edict of AD 301 we should be able to make certain predictions about metal values. Unfortunately there is some doubt here because the value given is 100 *denarii* for a KM of wheat. The KM is normally taken as an army measure which is twice that of a civilian *modius* and the price is therefore

quoted as 50 *denarii* per *modius*. If we took the KM to be one *modius* then the gold piece would have to be between 20 and 40 *modii* worth, that is 2000 to 4000 *denarii*. At 60 gold coins to the *libra* this would give a price of gold of from 120,000 to 240,000 which is a price not otherwise recorded until the middle of the fourth century after a further 40 years of inflation. The price is far too high, the KM cannot be one measure, and the best, but disputed, guess at the moment is that it does represent a double measure. At 50 *denarii* per *modius* the gold piece is from 1000 to 2000 *denarii*, and the price of gold should lie between 60,000 and 120,000 *denarii* a *libra*.

If the gold to silver ratio were at its lowest, 1:10, that would give a silver price of from 60,000 to $120,000 \div 10$, that is 6000 to 12,000 *denarii*. If the ratio were at its highest of 1:15 we should get a value of 4000 to 8000 *denarii*. Combining these we can see that the price of silver ought to lie between 4000 and 12,000 *denarii* per *libra*.

Armed with these suggestions we can establish, within very broad limits, the possible values of the coins produced from 294 onwards. The value that can be calculated is independent of any epigraphic or papyrus information and provides a standard of credibility against which any single historical fragment can be judged. It is however the intrinsic value of the coin which is necessarily the minimum value; in any system of currency the face value may depart considerably from this, by overvaluation.

i) Gold piece: 1000 to 2000 *denarii*.

ii) *Libra* of gold: 60,000 to 120,000 *denarii*.

iii) *Libra* of silver: 4000 to 12,000 *denarii*.

iv) Silver piece: of c. 3.4 gm., c. 95% silver, c. 5% copper. = 3.23 gm. of silver + 0.17 gm. of copper. Expressing this as gm. of silver, taking Copper = 1/100 silver, = 3.23 + 0.0017 of silver = 3.23 gm. of silver = 1/100 of a *libra*. Therefore its minimum value from iii) is from 40 to 120 *denarii*.

v) Laureate bronze/silver pre 301: of c. 10 gm., and c. 2.3 to 3.3% silver = 0.23 gm. of silver + 9.7 gm. of copper to 0.33 gm. of silver to 9.6 gm. of copper. = 0.23 + 0.097 gm. of silver to 0.33 + 0.096 gm. of silver = 0.33 to 0.43 gm. of silver = 1000 to 760 to the *libra* of silver. Therefore the minimum value from iii) = 4 to 12 to 5.3 to 16 *denarii*. This is, from 4 to 16 *denarii*.

vi) Laureate bronze/silver post 301 in the East: c. 10 gm. and c. 3.8% silver = 0.38 gm. of silver + 9.6 gm. of copper = 0.38 + 0.096 gm. of silver = 0.48 gm. of silver = 678 to the *libra* of silver. Therefore the minimum value from iii) = from 6 to 18 *denarii*.

vii) Radiate bronze: c. 3 gm. with a maximum of 0.1% of silver = 0.003 gm. of silver + 3 gm. of copper = 0.003 + 0.03 gm. of silver = 0.033 gm. of silver = c. 10,000 to the *libra* of silver. Therefore the minimum value from iii) = from 0.4 to 1.2 *denarii*.

viii) Small laureate bronze: c. 1.3 gm. with a maximum of 0.1% of silver = 0.001 gm. of silver + 1.3 gm. of copper = 0.001 + 0.013 gm. of silver = 0.014 gm. of silver = c. 24,000 to the *libra* of silver. Therefore minimum value from iii) = 0.16 to 0.5 *denarii*.

Note: if the value taken in vii) and viii) of 0.1% silver is too small the effect will not

be great. Even if the silver content were taken to be 1% this could only double the minimum and intrinsic value to give vii) 0.8 to 2.4 *denarii* viii) 0.3 to 1.0 *denarii*.

This then establishes a background against which the new information may be fitted. The silver piece or *argenteus*, the large laureate silvered bronze or *follis* and the smaller denominations all have intrinsic minimum values which any scheme of explanation must respect. It is only at this point that the textual evidence should be admitted.

Up to 1970 all explanations of the price of gold in AD 301 centred on one fragment of Diocletian's Price Edict which gave a battered reading involving a multiple of 10,000 *denarii*. The sign M for myriads (ten thousands) was clear, but the figure multiplying it was not. The original reading was ε, 5, and this prevailed for some time though with hindsight we can say that our knowledge of the price of wheat should have made this reading suspect. Our lower limit on this basis has been fixed at 60,000 *denarii* for a *libra* of gold and anything lower would suggest a very high, even famine, price for wheat which runs completely against the spirit of the Edict.

It was with relief therefore that I adopted Reynolds and Crawford's suggestion of an emendation by which we read not ε, 5 myriads, but θ, that is 9 myriads. This gave a more rational result. But we now know this to be wrong for the letter should have been read as ζ, 7 myriads.

A copy of the Maximum Price Edict from Aezani was published in 1973 and there the price of gold is clearly and fully legible:

aurum] obryzae in regulis sive Ϸ LXXII
in] solidis pondum unum

and further

de argento hoc est pusula primi pondum I Ϸ VI

This gives us a *libra* of gold at 72,000 *denarii*, a gold piece at a minimum value of 1200 *denarii*, a *libra* of silver at 6000 *denarii* and an *argenteus* at a minimum value of 60 *denarii*. All these fall well within the predicted limits. Substituting the appropriate values in sections v to viii we have minimum values for the *follis* pre 301 of 6 to 8 *denarii*, post 301 of 9 *denarii*, and for the radiate and small laureate of 1 and ¼ *denarii* respectively.

The final step in constructing an internally consistent picture is to add in the information given by the Aphrodisias fragments of the Coin Edict of September the first 301. A little information may be added from the slightly earlier Price Edict.

One fragment of the Coin Edict talks of coins of '*geminata potentia*', that is, doubled values. Two other fragments are as follows:

- a) *]rgenteus centum denariis[*
- b) *ti quinque denariorum potentia vige [ant.*

Fragment a) needs little help to tell us that the *argenteus* should now be worth 100 *denarii*, presumably after a rise from 50 *denarii* some time before. This makes sense,

given a minimum value at the time of the Price Edict of 60. Silver had to be re-tariffed and was over-valued by some 60%.

When publishing fragment b) Reynolds and Crawford resisted the temptation to suggest.

*sed ut nummi vigin
ti quinquae denariorum potentia vigeant*

thus giving the *follis* or *nummus* a value of 25 *denarii*. All continental opinion at present prefers this suggestion and it has its own simplicity as well as help from the Price Edict and some ambiguous papyri to support it. Papyri support a possible coin of $12\frac{1}{2}$ *denarii* re-valued at 25, and the wages in the Price Edict start at a minimum of 25 and work upwards in multiples thereof. If the lower denominations were given values of 5 *denarii* for the radiate and 2 *denarii* for the small laureate all values of the Price Edict would be easily payable in the new coins and the system would fit neatly together.

The one difficulty brings us full circle, the mark XXI or KA on the *folles*. Reynolds and Crawford rightly remarked that tempting though *vigin/ti quinquae* is as a suggestion it does make very strange nonsense of the mark XXI for you would have a coin of 25 *denarii* marked XX or XXI. They suggested that the *ti quinquae* might refer not to the *follis* but to the next coin down the sequence, the radiate, or perhaps *radiatus*. This could give

*..... sed ut nummi radia
ti quinquae denariorum potentia vigeant*

which would allow a *follis* of twenty *denarii*, marked XXI, a radiate of 5 *denarii* (so marked by Aurelian under the guise of 20 *sestertii*) and, as the lowest prices in the Edict are 2 and 4 *denarii*, a small laureate at 2 *denarii*.

Between these two explanations we cannot at present decide. As the table shows both are fully possible, and only when new evidence comes to light can we move on to our next approximation in understanding the edicts.

| | <i>Reynolds and Crawford</i> | <i>Others</i> | <i>Minimum value</i> |
|---------------|----------------------------------|---------------|-------------------------------|
| <i>Follis</i> | 20 | 25 | 9 <i>denarii</i> |
| Radiate | 5 | 5 | 1 <i>denarius</i> |
| Laureate | 2 | 2 | $\frac{1}{4}$ <i>denarius</i> |

There remains only a cautionary footnote to remind us that this comfortable monolith has been assembled with clear unequivocal calculations in a decimal system which may be very far from the system which it seeks to describe. That system was in Latin numerals in which long division and multiplication were highly cumbersome, in which a duodecimal system prevailed, and in which there is every reason to believe that ambiguity and double meaning were highly prized as a means to good style. This was first

gleefully pointed out by Callu, ably expanded and abetted by Kienast, and recently re-embroidered by Callu again.

In our frame of reference in which sacred and secular are rigidly divided, ambiguity is studiously avoided, and money matters above all need to be clear and concise, it comes as a welcome warning to see in how many ways the Roman Empire purposefully amalgamated the sacred and the secular — could see no distinction between them — delighted in ambiguity, and may very well have been extremely vague over economics.

Does the mark XXI really denote value, asked Kienast, does it denote value at all, might it not rather celebrate the *Vicennalia* (XX) *Imperatoris* (I)? Is it accident, asks Callu, that twenty years after Aurelian first put the XXI on the coins in 274, Diocletian, in 294, removed it? And kept it in abeyance until his own *Vicennalia* in c. 301, when it just happened to appear on another coin? The radiate coins often show, in a wreath, the VOT XX which celebrates the twentieth anniversary of the senior emperors and the VOT X which fits the anniversaries of the junior emperors. On some silver coins in the West we have in a wreath, XCVI; should this be understood as *Decennalia* (X) *Constantii* (C) *Victoris* (VI)? After 309 the gold coin settles at a weight of 72 to the *libra* of gold; it is even marked as such LXXII. But transliterated into Greek this becomes OB which has always, up to now, been taken as a contraction of Latin for refined gold, *Obryzium*.

Abstract

Part I Coins from museums at Plovdiv and Burgas in Bulgaria are listed and compared with coins published from the excavations at Histria in Romania to give a preliminary account of the distribution of Roman coins in S E Europe.

Part II The varied evidence on the coinage reforms of Aurelian and Diocletian is brought together in an attempt to construct a consistent picture of monetary events at the end of the third century AD.

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On a mycoform stone structure in Orkney, and its relevance to possible further interpretations of so-called souterrains

by DON BROTHWELL

It is now a hundred years since Joseph Anderson concluded that 'no class of structural remains has been more fully illustrated' than the so-called hypogeum, earth house or souterrain (Anderson, 1876–78). Since then there has been a steady series of additional notes on these structures, particularly in Scotland and Ireland. Sufficient progress and new data seemed to have been made by the 1950's to permit Wainwright to review them for Scotland generally and produce a detailed monograph on those for the Angus region (Wainwright 1953, 1963). Unfortunately, although numerous sites have been recorded where these structures occur and some basic details are available for most, few are really well described, and there seems to be as much confusion as ever resulting from vague or misleading terminology and their uncertain aetiology. At present, there is no good reason why a Victorian cellar with steps (house removed) or some forms of World War II air raid shelter might not equally be scored and considered as a (?regional/social) variant!

Before describing a new Orkney find of relevance here, some brief further comment on terminology should be made. I agree completely with Wainwright (1953) when he says that none of the names used in describing these structures are 'adequate as a scientific archaeological label' (219). There is certainly a point in any developing field when an attempt should be made to clarify terminology, and this threshold would now seem to have been reached. The so-called earth-house, is not made of earth and may cut well into bed rock. Perhaps souterrains has been a more cautious term – covering as it does an underground passage, tunnel, subway structure – but does not imply any expanded or terminal 'living' or 'storage' area which some seem to show, and it is difficult to determine how much of some structure was originally underground. Ideally, morphological description should be divorced from incorrectly implied function – 'house', 'store', 'refuge' and so forth. New names may only add to the ever increasing scientific terminology, but at times some compromise may be possible. It will be seen in Fig. 1 that in plan the structures under consideration are not easy shapes to describe by reference to basic geometric shapes. However, the majority are comparable in general form to some mycotic (fungal) structures – and it would therefore seem possible to initially refer to this whole group as *mycoform*. It is also possible to define a number of variants of this

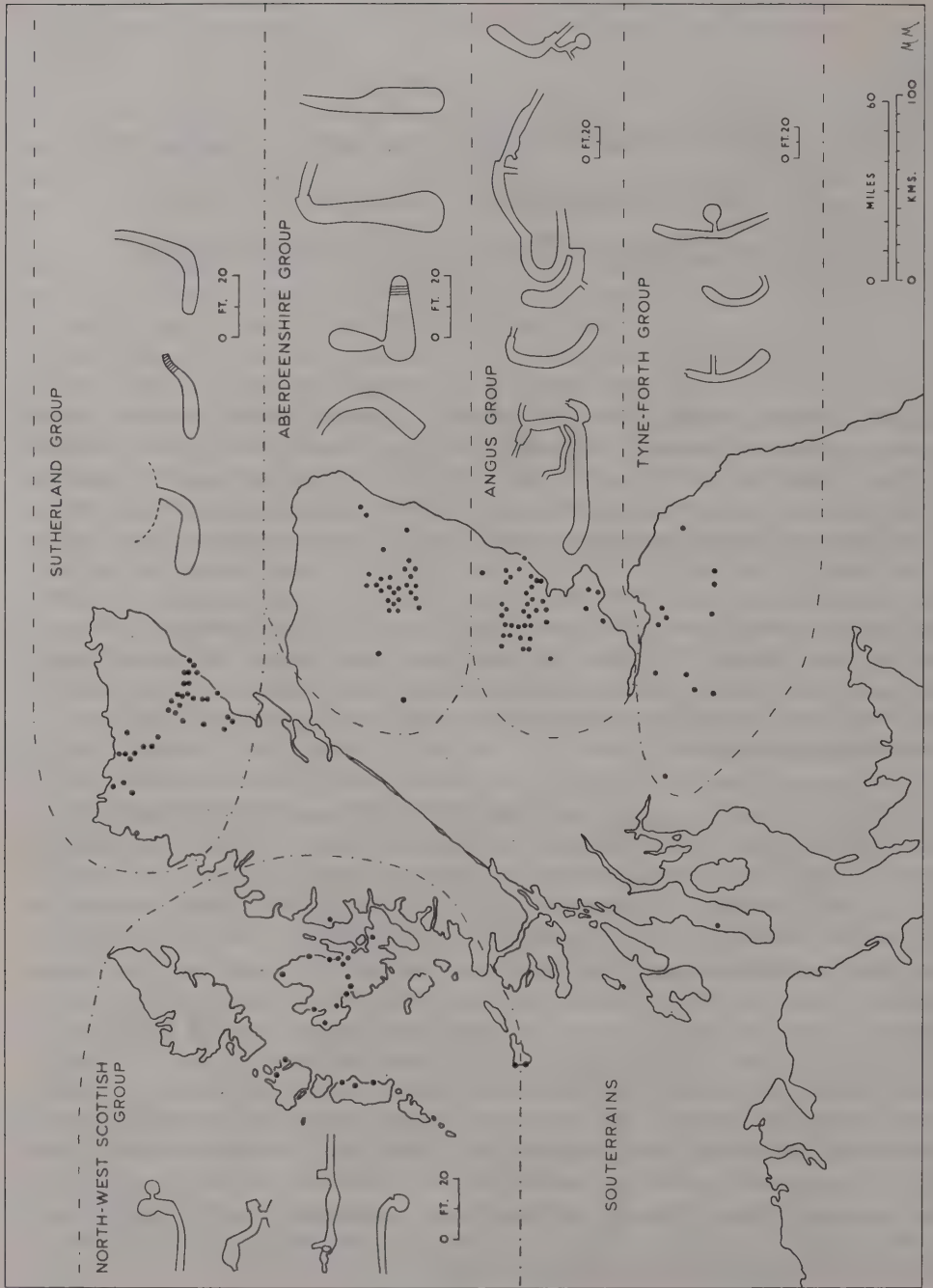


Fig. 1 Distribution of variable mycoform structures in Scotland, excluding the northern isles, with some indication of previously suggested regional groups. Examples, in simple plan are indicated for those areas.

A MYCOFORM STONE STRUCTURE IN ORKNEY

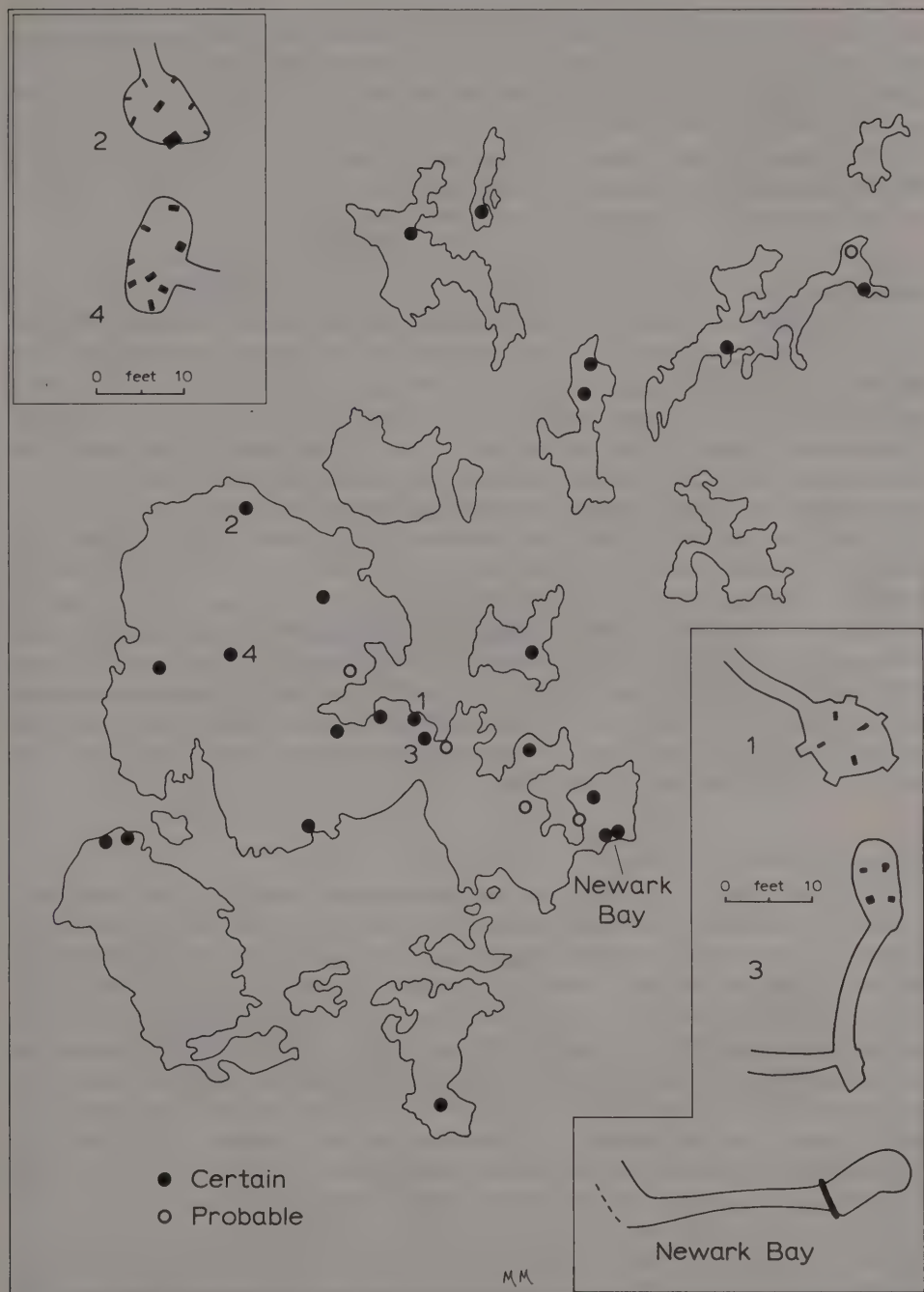


Fig. 2 Distribution of mycoform structures in Orkney. A few questionable cases are included. The Newark Bay area is indicated.

basic group — but accepting as in some biological classifications, that there may be some gradation into the next form. This series of sub-groups probably indicate temporal and functional differences as well as regional ones. Wainwright (1953) reviews these and has suggested groups in some detail, so no further elaboration is needed in this report. In the following description and discussion of an Orkney case I shall attempt to select terms without, I hope, implying special functional significance. Function may then be discussed as a separate question, not biased by already used terminology.

The Orkney Site

The structure described here was discovered and investigated between 1969 and 1972, as part of a programme of rescue excavation initiated by me at Newark Bay in the east Mainland of Orkney (Fig. 2). The main reason for the work was in order to save a series of skeletons from a coastal area, known to have been falling into the sea, as a result of continuous coastal erosion, over the past 50 years. These now form the longest and best preserved Norse series as yet recovered, and are associated with a small church of probably 10th century date (on the evidence of coins below flooring).

Below the chapel and part of the cemetery was a partly damaged narrow stone passage with a small terminal area. Immediately beyond this, and apparently representing a separate building phase, was a similar structure but with steps and a much expanded terminal area. Superimposed over all these other features was the flooring and partly robbed-out walls of a fortified manor house, known to have been in use in 1700 (Low, 1879). Although a general site report is in preparation and will be published elsewhere, the 2nd mycoform structure is sufficiently unique to warrant special note — not only because of its unusual nature but also because it raises again the whole question of their function, especially perhaps those in Orkney.

The second mycoform structure

While extending the excavation of the Norse cemetery inland from the coastal face, 1 skeleton was found to be placed on what appeared to be a stone base. However, the slabs, of local Devonian sandstone or flagstone, did not form an intentionally constructed base to the grave but part of a containing wall built in a cutting extending generally about 2 metres into the soft pink 'marl' on the site. The base to the grave was simply part of the wall which had been left undisturbed when the grave was cut (Fig. 3). On investigating this stonework further, it became clear that the structure had been intentionally cut through the softer geological deposits even down into harder rock. Also, although burials had particularly damaged this end of the structure, sufficient remained to distinguish not only the vertical containing wall, but also a stepped structure extending for about a metre from the base. Nevertheless, most of both walls of the passage are intact and, as the burials were few in this region, much of the large flagstone roofing remained even if fractured in parts. Beyond the step structure, the length of passage extended for only 6.2 metres and then expanded from an average width of 0.6 metre to about 1.0 metre for the

A MYCOFORM STONE STRUCTURE IN ORKNEY

NEWARK BAY, ORKNEY Earth-house 2

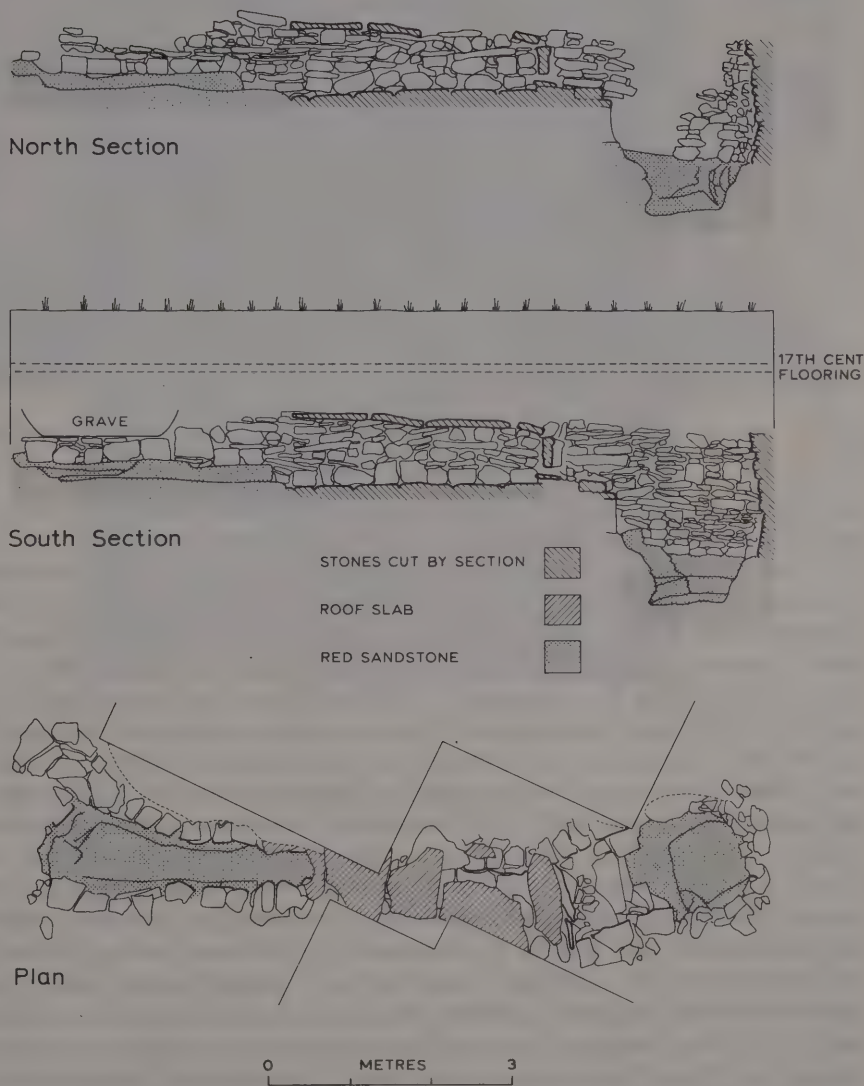


Fig. 3 General site plan and sections of the second mycoform structure at Newark Bay, Orkney. The long axis of the passage is approximately in east-west orientation.



Plate I Eastern face of the vertical blocking stone, and detail of the side walls in the Newark Bay structure. Scale in feet.

next metre. The height of the passage decreases from the stepped area to the expanded area from about 0.8 to 0.4 metre.

It is at this junction of narrow and expanded areas that a large vertical blocking stone slab occurs. This is well set into the stonework of the side walls on both sides, and in height nearly reaches the flagstone roofing (Plate I). This large barrier stone shows minor fracturing now, but was clearly intact when built into the side walling. There are no side slots or other stone alignment by which this heavy block could have been drawn up guillotine fashion or pushed aside. There is also no evidence to suggest that the stone was not fully contemporary with the walls and other parts of the structure. No human and no object of any great thickness could have passed below this stone, and similarly the gap between the upper limits of the stone and the broken roofing stones was also minimal.

The final, terminal end to the structure (Plate II) was rounded and 'bee-hive' shaped. The floor in this terminal zone was stepped down some 1.5 metres below the rest of the floor level of the passage, and was again cut into harder basal rock. The chamber was rounded, and as in the rest of the structure it was built up of coastally quarried sandstone or beach boulders. Unfortunately, the roof area was missing, probably as a result of the construction of the manor house, as burials did not occur in this area. The diameter of this end chamber was at a maximum 1.75 metres and it seems likely that the overall height must have been at least 2.25 metres. Considering the Orkney climate of

A MYCOFORM STONE STRUCTURE IN ORKNEY



Plate II Expanded terminal area of the Newark Bay structure, showing the general nature of the stonework and the basal area cut into sedimentary rock. Scale in feet.

today, even in mid-summer, the base of this terminal area was not dry, and after rains soon collected water to a depth of 30 or 40 centimetres. This is not the only instance of this kind and Buxton (1935), for example, found the 'gallery' of a similar structure at Portnacon, Sutherland, filled with water. The base of this expanded area is cut much deeper into the underlying harder Devonian rock to a mean depth of about 70 cm., and rough steps descend from the passage flooring to the terminal base. Most of the side walling is intact, although a part of the circular structure had collapsed, probably as a result of the construction of the 17th century building – there being no burials in that region. Indeed, extending over the whole of this area are flooring and walls belonging to the post-medieval dwelling. Probably at the date of construction of this later building, the lower structure was completely filled in, to prevent floor subsidence. At least the

post-Norse flooring was in good order and not distorted by subsidence. Regrettably, the top of this expanded end had collapsed or been destroyed long ago, so there is no way of determining whether the roofing was typical of other such structures in Orkney. However, during the clearing of the fill from this area, a long pillar-type stone was removed, and although bearing no special relationship with other stone-work when found, might have been a roof support of the kind typically found in the Orkney mycoform constructions (Fig. 2).

The Finds

A variety of finds have been made in Britain and Ireland in this type of structure. They include armlets, brooches, combs, pottery, human and various food animal remains. There is no obvious pattern to these finds, or any clear correlation with variation in the mycoform structures. In a few instances they can assist in dating, but there is clearly the danger that the cultural objects may often greatly post-date construction time. Indeed, this is the case with the objects from the Orkney site being described.

Near the burial on the area of disturbed south-west walling was a doubled-edged bone comb similar to 1 found in the Broch of Burrian in Orkney (N.M.A.S. 1892) during the last century, but which has subsequently been found also associated with Viking sites (Curle 1954). The comb was sufficiently near the skeleton to suggest a direct association at burial. It is composed of 3 separate worked segments of bone, assembled to give an expanded zone for gripping purposes, this part also displaying a tooled circular and crossed design (Fig. 4).

On the rock floor of the expanded eastern end was some decomposed wood which may have been originally part of a basket. This conclusion rests on the fact that a few pieces appear to display a simple plaiting form (Wright 1959). Some of this wood was kindly examined by Carole Keepax, who was able to demonstrate that the diameter of

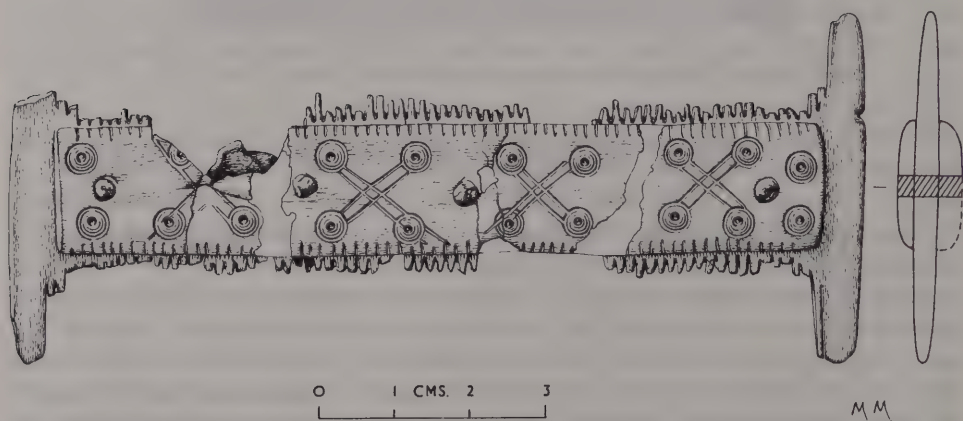


Fig. 4 Double edged bone comb from the Newark Bay site.

the pieces was of twig size with bark intact (the diameters being between 5 mm. and 10 mm.). Two fragments show distinct cuts. Twenty-five separate fragments were all identified as willow (*Salix*), and there is no reason to believe from their general appearance that similar pieces were not also of this genus. Although willow is rare in Orkney now, it was commonly used in basketry in the islands during at least the last century. The amount of wood preserved, and its limited extent, does not permit any conclusion as to whether it may have lined part of the base or sides of the rounded end area. However, it seems more probable that the twigs came from a smaller product, either left on the floor intentionally or dropped in as part of the later fill.

Discussion and conclusions

The 2nd of the mycoform structures excavated at Newark Bay presents a further problem in the interpretation of these so-called earth-houses or souterrains. In view of this, it seems worthwhile considering this example in relation to others, both in Orkney and elsewhere. This immediately presents problems, as the literature shows clearly what a heterogeneous mass of structures are placed under these titles. Indeed, overall names should perhaps be abandoned at this point, and alternatives found – either in relation to the region and cultural complex into which they seem to fit or even on tentative functional grounds. Practically anything is an improvement on earth-houses, even if some were indeed underground dwellings at times. Some of the simpler forms are little more than alleys – a little reminiscent of the passages between buildings at Skara Brae (Childe 1931). For instance, the long passage-like structures at Ardestie and Carlungie (Wainwright 1963), perhaps serving both as alleys and sheep/lambing shelters. Nearly comparable structures might be exemplified by the alley ways between Viking dwellings at Jarlshof (Curle 1935). A further consideration of some of these structures in relation to sheep husbandry may be rewarding, and there is no doubt that in the northern areas climatic exposure in winter months considerably increases sheep mortality, especially where food resources are poor, so that shelters can be of great survival importance. Stepped and narrow structures clearly fall outside of this possibility, but long, wide simple forms – especially where drains have been built in – might have economic links of this kind. In the more easily accessible interiors, food storage has also been suggested. Clearly this demands more thought, and indeed some experimentation is really needed here. Having now visited quite a number of these structures, I am impressed by the usual dampness of the floor and walls, so what foods could usefully be kept in such conditions? In the case of the Orkney example, perhaps the best constructed of any regional groups, the approach to the expanded end chamber is usually unpleasantly low and narrow and anyone attempting to live for long in the terminal area could expect deteriorating health. The conclusion that the dates of all these structures in Britain may be mainly restricted to the Iron Age and Roman times (Stevenson 1966) and are perhaps mainly of early Christian date in Ireland (Laing 1975) is as yet based on slender evidence. Even at the risk of non-contemporaneity, it would be worth attempting to get radiocarbon dates on shell and bone food refuse recovered from some of these structures. Without further dates, and

better cultural associations, it is really useless considering such topics as the 'racial origins of the souterrain builders' (Wainwright 1953). At present, they could equally well be the result of variable British and Irish populations, where necessity determined convergent evolution of shape in these structures.

One of the most puzzling features of a few of these constructions, found mainly in Ireland, is the internal barrier to easy access. Varying forms are seen at Rathmullen and Ardglass, Co. Down and another apparent form is seen in the Scottish example at Milton of Whitehouse, Aberdeenshire (Macritchie 1917), where the passage is intentionally blocked at 2 places so that access must have been very difficult. The ultimate in blocking devices is that seen in the Newark Bay example, and this clearly presents a serious question as regards the utility of at least some of these structures. Why utilize labour to dig out tons of earth and rock, construct steps, passage and expanded end area, only to completely prevent access along the passage? Admittedly, the roofing in the terminal area was not intact, but access through the roof would have cancelled out the need for passage and step construction — unless as some form of decoy structure.

So what are the other behavioural alternatives and possibilities? Although generally cautious, Wainwright (1953) states confidently that 'the souterrains of Orkney . . . are certainly dwellings', but this looks impossible in this case. An interesting alternative which seems to have been little considered since Thomas (1866–8) suggested it, is that some of the examples may be associated with religious settlement. He notes the case at Paible, Taransay, Harris, where the structure was near a chapel, and 'indicates a pre-Norse settlement of Christian secular monks It is quite possible the hypogeum was made by them to hide their heavy valuables from the invading pagan Norsemen.' (170–171). The Newark Bay example may be earlier than the Norse chapel found and most of the burial ground, but the close proximity may be significant and could be related to the earliest established chapel — as there is some evidence of rebuilding. In relation to this question, it is interesting that the local stories include the claim that the pre-Norse Christian settlement on the Brough of Deerness, not far away in the east Mainland, has an 'underground passage' associated with the chapel area. Could at least 2 periods of construction, then, be seen in Orkney and even elsewhere — in 1 case a security device for hiding purposes more than a refuge for man himself? Although clearly doubting this possibility, Wainwright (1953) mentions that some of these structures may have been 'Arkite cells' for 'penance and purification!'. Although seemingly an exotic explanation, it is interesting that the gap between the blocking stone at the Newark Bay site would have been sufficient for the handing in of food or passing out of refuse, but little else.

The reasons for these variable mycoform structures is not going to be answered by statistical analyses of the basic dimensions but in trying to find associations with other factors or structures, so that functional reasons may initially be found. The application of simple 'models' is doomed to failure. In these days of calling in ethnographic parallels one might question even whether the Newark Bay case was a house for ancestors (and it is interesting that in their forms the Orkney Group as a whole show there is some resemblance to earlier Orkney burial chambers). But the Irish examples demonstrate that

these structures were of use to early Christian societies also. If they were to keep valuables in, then why the long passages (some over 100 feet) and sometimes elaborate terminal areas? Could some be dwellings for shepherds – perhaps for bad times of year when the sheep could suffer exposure or at lambing time. A special search for fragments of wool in floor cracks and joints might be revealing, and in the damp conditions seen in some of these structures, keratin might preserve well. The double constructions in the Teeling III structure in the Angus group is certainly suggestive of 2 intentional zones (?sheep and shepherd). But other examples show narrow steps and passages, which defy a simple economic explanation.

So these mycoform structures, hypogea, earth houses, souterrains or whatever the name should be, remain an archaeological enigma. But as such, they contribute usefully to archaeology, not only in demanding new thinking and approaches, but in reminding us constantly that what may superficially be similar structures could be linked with widely different aspects of human behaviour.

Acknowledgements

I wish to thank my friend Arthur Delday, owner of the Newark Bay site for permitting me to excavate on his land. Special thanks must go to numerous ex-students of York University who formed the hard core of excavators over the years; in particular Geoffrey Bowles and Alan Fleck who assisted with the site plans of the structure reported on. To any others who have given of their time in this project, I thank you.

Abstract

An underground structure is described from the east mainland of Orkney. In general morphology it is very similar to some part of the variation seen in stone constructions known generally as souterrains. However, unlike any other, there is a large blocking slab which prevents access to the final expanded bee-hive end of the structure. This is discussed in relation to what has been said previously about the possible uses of these constructions, and it is concluded that there is varying aetiology – the present case perhaps having ritual significance. Terminology is also considered, and it is suggested that 'mycoform structure' is preferable to earth house and souterrains.

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DON BROTHWELL

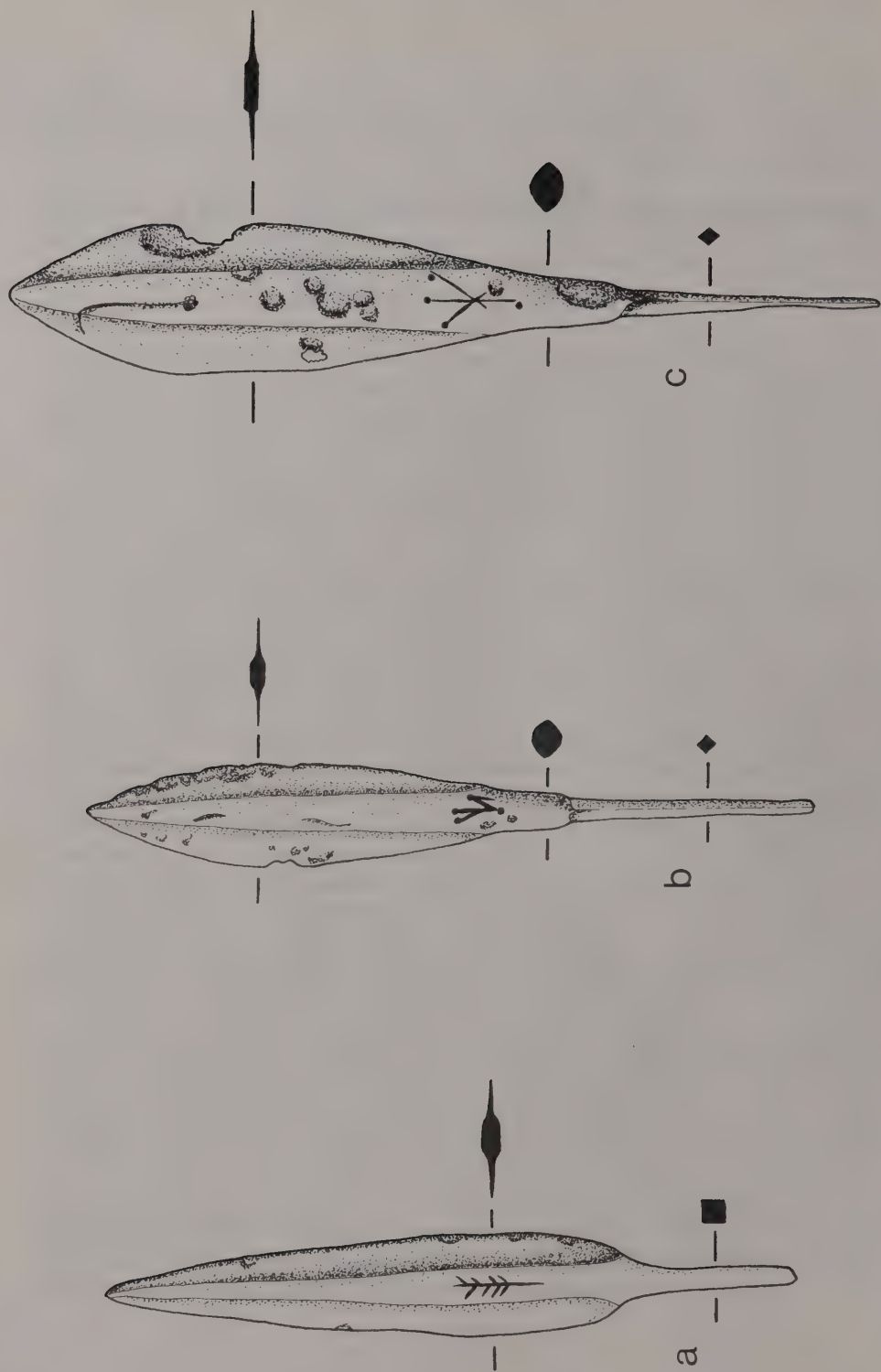
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Three Inscribed Arrowheads from Tell el 'Ajjul

by JONATHAN N. TUBB

The 3 arrowheads presented for discussion here are in the collection of the Institute of Archaeology in London and are derived from Petrie's excavations at Tell el 'Ajjul. These 3 have been selected from the many recovered from that site owing to the interesting symbol which each exhibits (see Fig. 1). All 3 have been published previously in the Ancient Gaza reports, although no special attention was paid to the marks. (Fig. 1a is Petrie 1931: Pl. xx: 57. Fig. 1b is Petrie 1932: Pl. xvi: 130 and Fig. 1c is Petrie 1934: Pl. xxx: 364.) In the case of Fig. 1c, although the arrowhead is illustrated, no trace of the inscription is to be seen. That it does represent the same piece was verified by detailed measurements, in addition to consideration of the general formal similarity. The omission of the inscription is easily understood when the photographic plates of bronzes published in the Ancient Gaza reports are examined; here it is apparent that the pieces were published prior to any conservation treatment (see for example Petrie 1931: pl. xviii). This also explains the only partial rendering of the mark on arrowhead Fig. 1b (compare above drawing with Petrie 1932: pl. xvi: 130). The present condition of Fig. 1a implies that it had suffered considerably less corrosion than the other 2, and hence reading of the symbol was not impaired by poor surface preservation. It should be stressed at this point that the method of cleaning which was applied to these pieces, namely chemical 'stripping' of the corrosion products, was performed many years ago and is a process on no account to be recommended. This unsightly and detrimental method, which is damaging to the structure of the piece and in no way preserves the original surface of the bronze, has been largely replaced by more sophisticated methods of mechanical treatment. The results of chemical 'stripping' resulting in the unfortunate pitting and metal loss at the edges can be judged from the illustration which fairly represents the present state of the objects. Neither is this process the only one available to reveal such inscriptions, careful mechanical cleaning and/or X-ray analysis will show up these surface features equally well. The weights of the 3 arrowheads are as follows: Fig. 1a — 12.39 grammes, Fig. 1b — 8.24 grammes and Fig. 1c 15.02 grammes. The large size and high weight of Fig. 1c may indicate that this piece should really be regarded as a javelin-head.

Typologically, these arrowheads fall into 2 classes. Figs. 1b and 1c have ob lanceolate blades with low flat ribs, rhomboidal section tangs and undeveloped stems. These features, considered together, indicate a date in the Late Bronze Age. Especially indicative is the shape of the stem, a slight swelling at the base of the blade resulting from its union with a rhomboidal section tang. As the Late Bronze Age proceeds, this stem



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becomes progressively more angular, and its join with the tang becomes more distinct, resulting, in the Iron Age, in a vertical 'cut' (Cross and Milik, 1956: 18). As the figure opposite shows, these features have not reached their ultimate extremes, and the stem in each case is rounded in cross-section and the 'cut' poorly defined. A date early in LB IIB is therefore suggested. This is further substantiated by Fig 1b having been found in a grave in association with a Cypriot White Slip II milk-bowl (Duncan 1930, 4, 19). The grave, No. 1149, contained 3 other arrowheads of LB II type, a bronze mirror and a flat based bronze bowl. (See Petrie 1932: Pl. xvi: 35, 138 and Pl. xvii: 159 (arrowheads), Pl. xv: 83 (mirror) and Pl. xxiii: 41 (bowl).) Fig. 1c, for which there are no additional associations, though larger, is formally very similar and must belong to the same period. Fig. 1a is of a different shape, having a lanceolate blade, low flat rib, no stem and a square section tang. The lack of stem and also the tang of square section implies a somewhat earlier date; perhaps LB I or Late MB II (Cross and Milik, 1956:18). The piece is assigned to level II (Petrie, 1930: Pl. xx: 57 and p8), which whilst not adding precision to the suggested date does not in any way disagree with it.

Before discussing the inscriptions themselves, it is interesting to note the manner in which they were executed. It is clear from a purely superficial glance that these marks were no idle scratchings but were applied by an experienced hand. Microscopic examination revealed that in all 3 cases, the linear features were engraved using a tool

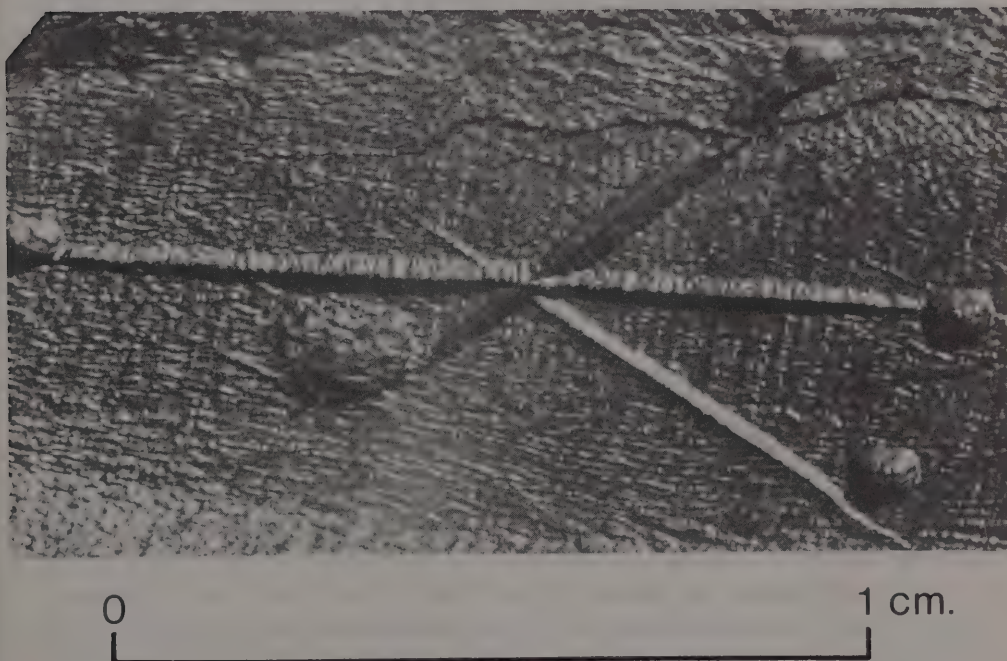


Plate I

which effected total removal of the metal. In the case of Fig. 1c, the resulting groove is sharply "V" shaped in cross section, the implication being that the edge of a chisel or a metal burin was involved. The cross-sections of the grooves of Fig. 1b are rounded, thus suggesting some form of gouge. The latter may also apply to Fig. 1a, though the engraving, being shallower, it is more difficult to decide. The terminal circular depressions of Figs. 1b and 1c were evidently punched, for there are signs of metal displacement around the circumference of the holes (see Pl. I). That this punching was performed after completion of the linear components is apparent from the way the depressions, in some cases, interfere with the line of the engraving (see Pl. I). This, then, rules out the possibility that the depressions were put in first as mere guides for the engraver; instead they must be seen as integral parts of the design. It is the author's intention to submit the 3 arrowheads to compositional analysis at a later date and to further investigate the nature of the engraver's tool required to produce the inscriptions.

As to the symbols themselves, that on Fig. 1a, the earliest consists of a branch motif with a central stem and 4 branches on each side. The other 2, on Figs 1b and 1c show a marked similarity to each other and on consideration of the typology of the arrowheads, must be seen as roughly contemporary and somewhat later than the Fig. 1a sign. Both are characterised by the use of depressions at the ends of the linear features. On Fig. 1c, the 2 side limbs meet the central stem at the same point and slightly cross it, whereas on Fig. 1b it appears that the right-hand limb meets the stem at its base. There is an additional short line suspended from this limb with no terminal depression.

As to the purpose of these symbols, and their meaning, it is obvious that no clear conclusion can be given. Inscribed arrow and javelin heads of a later date from Palestine and Lebanon are known with inscriptions which are read as personal attributions (Ronzevalle, 1926, Milik, 1956, Cross and Milik, 1954). By analogy, it seems likely that the symbols on the 3 'Ajjul arrowheads represent marks of personal ownership. Certainly, if they represented manufacturer's marks, more examples might have been expected. As it is, arrowheads with inscriptions are rare and with single symbols even rarer, thus arguing against any widespread practice in this direction. Perhaps it should be seen as reserved for the few who could afford the luxury of having their personal 'monogram' carefully engraved on objects which must, after all, be considered expendable.

As with potters' or masons' marks, the question will inevitably be raised as to whether these represent alphabetic symbols. Of the 3, only that of Fig. 1c bears any slight resemblance to roughly contemporary alphabetic signs. There is a certain similarity between this symbol and the sign interpreted as *d* or *h* (depending upon the orientation of the sign) in the early South Semitic alphabets of Balu 'ah (Horsfield and Vincent, 1932: 425, Fig. 5) and Deir 'Allā (Van der Branden, 1965: 129–49). It is interesting to note that the Deir 'Allā script also utilises terminal depressions on certain letters, though not on the appropriate one. Besides, the occurrence of the South Semitic alphabet at 'Ajjul which lies on the coastal plain of Palestine, seems rather doubtful. Parallels for Fig. 1c with signs of the North Semitic group of alphabets are even less convincing and it is not until the 10th century BC that even a vague similarity to the early Hebrew K of the

Gezer Calendar appears (Donner and Röllig, 1964: Pl. xii). However, none of these parallels should be emphasised and indeed it is possible to find an equivalent symbol amongst the potter's marks from First Dynasty Egypt (see for example Petrie, 1914: Pl. xxi). On balance, it is more reasonable that no alphabetic interpretation should be sought, particularly in view of the lack of correlations for the symbols of Figs 1a and 1b. The sign of Fig. 1a is better interpreted as a purely pictographic representation of a branch of a tree or perhaps, more appropriate to the object, the flight of an arrow. It is possible that the symbols of Figs 1b and 1c are stylised versions of the same motif or perhaps are merely abstract signs of significance only to the owner. Whatever their meaning, and whether or not they can be equated with alphabetic signs, are questions which in no way detract from their interest. With careful treatment and examination it is to be hoped that more such inscribed arrowheads will come to light, thus adding more information to a currently extremely small corpus of material.

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Summaries of M.A and M.Sc. Reports 1975/76*

Archaeological Evidence and Legends of Greek Settlement in Cyprus (*Report* housed in the Institute of Classical Studies Library)

The first chapter examines the present archaeological evidence for Greek settlement in Cyprus. It was concluded that completely positive evidence for such a settlement can only be attested in LCIIIB, though there is some evidence that suggests that some Mycenaean may have settled in Cyprus in LCIIIA.

The legends were examined in the 2nd chapter and it was concluded that although most of them date the 1st Greek settlements to the era of the Trojan War, they are not contradicted by archaeological evidence, but to a certain extent confirmed.

It was suggested that the legends of Praxandros, Demophon and Kepheus are consistent with recent archaeological evidence and that the legends of Teucer and Agapenor may refer to the LCIIIA ashlar building settlements in which there is some evidence of strong Mycenaean presence.

For some of the legends, such as those that refer to the naming of Idalion, the naming of Soloi after Solon, and Salamis after Teucer's birthplace, the evidence seems to suggest that they were on the main aetiological, i.e. that they tried to explain the non-Greek names of places which had been settled before the Greeks had established themselves there, by Cypriots, or in any case non-Greeks.

N. Charalambidou

The Excavations of a Neolithic Causewayed Enclosure on Barkhale Down, Bignor Hill, West Sussex, 1958-61

The site of Barkhale is located on the South Downs, approximately 4 miles north-west of Arundel (grid ref. SU975126). It was first discovered in 1929, and identified as a neolithic causewayed enclosure.

Excavations were carried out on the site between 1958-61, under the directorship of Dr Seton-Williams with the aid of extra-mural students from London University. During the course of these excavations a total of 16 trenches were opened across the encircling bank and ditch, which are hardly visible except from the air, and a further 4 trenches exposed a small section of the enclosure interior.

Finds from the excavations were sparse. No organic remains surviving in the acidic soil. The ceramic finds were analysed by Dr I. Smith, who identified only 2 definitely neolithic sherds from the entire collection. Struck flint flakes were more numerous, but of these only 15 displayed signs of secondary working. However, most of these worked pieces had attributes assignable to the Early Neolithic period. Unfortunately few were found in well stratified contexts.

The excavations at Barkhale showed that the site consisted of a single interrupted ditch with a bank around its inner edge, and enclosing an area of approximately 3 hectares. The finds from the excavation do not give a firm date for the enclosure, but the similarity between its size and shape as compared to neolithic causewayed enclosures and lack of any other parallels, seems to place it in this category. The limited excavation in the enclosure interior failed to provide any evidence relating to function.

John Clipson

The Sequence of Hittite Kings

The disputed areas of the king list are examined, and the evidence of the offering-lists is regarded as unreliable.

In the Old Kingdom a dynastic rivalry between 2 branches of the same family is distinguished. Telipinus' father was Hantilis, Huzziyas' father was Ammunas. This implies a short Old Kingdom.

In the 'Middle Kingdom' the Kaska incursion, the treaty with Pilliyas, the Huzziyas seal and the onomastic evidence of the land donation texts are examined, with the conclusion that there is no satisfactory evidence for the existence of Hantilis II, Zidantas II or Huzziyas II.

* Except where otherwise stated, *Reports* are housed in the Institute of Archaeology Library.

Among the predecessors of Suppiluliumas, Tudhaliyas *tuhkantis* was Arnuwandas' brother; Tudhaliyas DUMU = Tudhaliyas son of Arnuwandas = Tudhaliyas II; Suppiluliumas' father was Hattusilis II, and his grand-father may have been Tudhaliyas I. (*KUB* XXIII, 13 may be part of a text of Suppiluliumas, and *KUB* XXVI, 91 may be a letter from Mursilis II to Mashuiluwas.) This reconstruction implies a short Early Empire period.

The generation-count is unreliable, but the general tendency of the present evidence is to exclude the highest chronologies, without necessarily favouring the lowest.

D. F. Easton

The Recovery of Archaeological Evidence by Fieldwalking (with particular reference to the parish of Gt. Doddington, Northants.)

The potentials and problems of fieldwalking are compared to those of other survey methods. Various fieldwalking techniques of data collection and recording are discussed, emphasis being placed on the recovery of more exact information about the distribution of artifacts, to enable quantitative analysis. Other factors (e.g. soil conditions) which affect the recovery of artifacts are considered.

A programme of research to test the efficiency of various fieldwalking techniques, and to improve understanding of the meaning of artifact distributions, is outlined.

The results from Gt. Doddington are presented, and the evidence of Saxon settlement is discussed at some length. Nine Saxon sites have been discovered in the parish, suggesting a site density of over 5 per square mile. The sites appear to be single farmsteads or hamlets. The Iron Age and Roman pattern of dispersed settlement (like some of the sites themselves) appears to continue into the Saxon period. Nucleated settlement may not have existed until the Middle Saxon period (or later) when most of the smaller sites were deserted. Nucleation was not complete until the Post Medieval period, when the small hamlet of 'Thorpe' was abandoned. It is suggested that the process of nucleation may have been related to population increase and the development of the open field system.

G. R. Foard

Aegean Bronze Age Religious Iconography: Interpretations of some new finds (Report housed in the Institute of Classical Studies Library)

The results of the study are as follows.

The gestures of the attendants of the High Priest in the procession on the mountain and of the High Priest seated in the hide enclosure on the flagship of the 'Ship Fresco' suggest that those officiants possessed sanctity. The long procession below the walled city to the right is composed in part of men leading a bull and others performing invocatory dances. The participants show by gesticulations that they are making their way to a ritual place, expecting to find an epiphanied deity, perhaps in the form of a High Priest.

Various figurines and idols, hitherto enigmatic, are now to be identified as representations of worshippers. These include the LH III A2 figurine from the cache to the north-east of the Shrine with the platforms at Mycenae, and 1, possibly more, of the cruder idols found in the triangular alcove to the north-west of the same shrine. Several members of French's 'Naturalistic' group, her 'Proto-Phi' and 'Phi' groups, and the first 2 divisions of her 'Transitional' group are also to be identified as worshippers.

The Enkomi 'Horned God', whose identity has wavered between the Aegean and Cyprio-Levantine camps may now be allocated to the Mycenaeans. He exhibits a primarily Aegean gesture suitable for the reception of worshippers.

B. E. H. Follansbee

Food in the Bronze Age Aegean and Cyprus (Report housed in the Institute of Classical Studies Library)

The investigation of animal and plant remains from Bronze Age sites will provide valuable information about the everyday life of the people and the economic life of their settlements. The scope of this paper is confined to the availability and processing of various foodstuffs.

The evidence discussed suggests that meat was an important component of the diet, supplemented by fish in the islands and coastal areas and by the flesh of wild and domestic fowl. The twin cornerstones on which a flourishing mixed agricultural economy was built were cereals and 2 new crops, the olive and the grape. Cereals were grown and stored on a large scale, and probably cooked as porridge or unleavened bread. By the LBA, the economic importance of the olive and the social popularity of wine had both become enormous. Various green vegetables, fruit and nuts completed a balanced and healthy diet, and dishes were enlivened by the addition of spices and flavourings.

This survey demonstrates, not surprisingly in a society of such evident refinement, that the Greeks of the Bronze Age were sensible and sophisticated in their eating habits.

Margaret Maclean

A survey of Theran pottery of the Late Bronze Age and its Minoan connections

The Theran pottery of the Late Bronze Age shows many elements of a traditional Cycladic derivation both in the shapes of some vases (nipped ewers, plain conical cups, Kernoï) and in the decoration (running spirals, pictorial scenes). Yet the influx of the Minoan civilization in the mid 16th century exceeds any simple exchange of goods and ideas through trade and suggests a permanent Cretan element on the settlement of Akrotiri. Particularly so, since the percentage of imported vases of more personal use (drinking cups and askoi) greatly outnumbers the local production in these shapes. Cretans, however, should have settled peacefully, since local independence is apparent in the selectiveness of Minoan decorative elements and the preservation of Cycladic ones.

Links are shown especially between the Akrotirian and the East Cretan pottery, since both exhibit a late survival of the white on dark technique, the use of white as additional colour and a longevity of plant motifs even when marine designs decorate the imported Knossian ware. In particular the Zakro-Palaikastro group and the Gournia-Mochlos-Pseira group offer the best parallels in shape and decoration for the prototypes Theran potters should have imitated.

Further material of the transitional MMIII/LMIIa is needed to elucidate the correlation between Eastern and Western Crete at that time, as well as clay analysis of the 'imported' Minoan vases to solve the problem of the colonisation of Akrotiri.

A. Papagiannopoulou

Man/Environment relations in the Lake Pleistocene of East Siberia

The paper examines one aspect of the relationship between man and environment – how conditions characteristic of a particular physical environment may have limited the time during which a settlement and/or site was formed, occupied and used. Two conditions – periglacial processes and the movement of animals in a 'cold' environment – whose characteristics are known from present-day research – are considered, and the evidence accumulated through the Soviet study of geochronology/Pleistocene stratigraphy, periglacial phenomena, palynology, and zoology in a region occupied by Upper Palaeolithic groups during the last glacial period (24,000 – 13,000 BP.) is reviewed in terms of the features reflecting these conditions.

C. D. Stephens

An Analysis of the Bifaces from Keswick and Whitlingham

For over 150 years in Britain the commercial exploitation of river terrace deposits for gravel had resulted in the recovery of numerous artifact collections such as those from Keswick and Whitlingham in Norfolk. However, the purely commercial excavation techniques employed in recovering this material resulted in a loss of information about the geological provenance and association of these artifact collections.

This study hoped to establish whether or not culturally related groups of artifacts, 'industries', were present at the sites of Keswick and Whitlingham. There are two criteria in the definition of an 'industry' suggested by Wymer (1968: 17). Firstly, the artifacts must be found together; and second they must have been produced by 1 group of people using a particular traditional method of stoneworking.

An analysis of various physical characteristics, raw material, staining, condition, and patination on the bifaces was undertaken in an attempt to discover if these sites satisfied the first criterion. The identification of a common source of raw material, flint, was seen as a prerequisite for the other analyses. The assessment of the amount of staining on the bifaces made it possible to postulate their provenance with a single level at each of the sites. The assessment of the condition of the bifaces suggested a substantial degree of homogeneity within both collections. The patination of flint which has been so widely discussed in the analysis of flint artifacts was found to be very unreliable.

The typology used to test the second criterion was described by Bordes (1961). It was demonstrated that a particular cultural group, the Lower Middle Acheulian, was present at both Keswick and Whitlingham. This group was found to have clear parallels in Britain and France with sites like Baker's Farm, Furze Platt and Cagny la Garenne.

It should be possible then through careful use of these methods for studying selected physical characteristics and typology for archaeologists to identify 'industries' with artifact collections from gravels.

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Kathryne B. White

Summaries of Undergraduate Reports for 1975/76

Imperial Portraiture on Late Roman Coins

Portraiture on gold and silver coins of the late third and early fourth centuries from the British Museum collection were examined in detail in order to isolate the origins of the 'tetrarchic' style of portraiture.

John Boden

The Pollen analysis of four round barrows at West Heath Common, Sussex

Four round barrows out of a cemetery of 12 were studied in this report, and a picture of the Late Bronze Age vegetation at West Heath Common was obtained. The barrows were seen as being situated in a large clearing surrounded by hazel scrub and alder-oak woodland. Two of them have been dated by the C¹⁴ method and it has been attempted to place the other 2 barrows relative to these by the use of ratios of non-arboreal to arboreal pollen. From this, an idea of the vegetational history of the site within the late Bronze Age has been suggested. The use of these ratios in this way has been questioned, because of the inexact nature of pollen analysis, and the possibility of interpreting the same results in different ways. A field bank, thought to date from the 17th century AD, has also been studied by pollen analysis, and it helps to illustrate the significant vegetational changes in the area from prehistoric times to the present day.

Joan Baigent

A Contribution to the Analysis of Stone Tools from Neolithic and Bronze Age Sites in Britain

This report aims to provoke thought on the use of stone assemblages in interpretation and comparison of sites of the Neolithic and Bronze Age periods in Britain. There is criticism of the lack of attention paid in previous works to the advances in classification made by French prehistorians on Palaeolithic assemblages. It is believed that the application of basic principles developed by French prehistorians will allow a standard typology to be formed. However some of these principles are subject to a critical review especially with regard to their validity when applied to material from the Neolithic and Bronze Age periods in Britain. From this critical review of previous work a new typology has been formed which takes into account recent methodological discussion. The sample used to allow the formation of this new typology was provided by the surface collections of Mr R. Garroway-Rice from the parish of Alfriston in Sussex. Although this is not an ideal sample it represents the remains of intensive exploitation over a long period of time during the Neolithic and Bronze Age periods. It also contains over 1000 flake tools which is exceptional for these periods.

J. E. Beech

Economic Aspects of Caerwent (Venta Silurum)

This paper is an attempt to look at the economic life of Caerwent, the Civitas Capital of the Silures, in relation to its surrounding tribal area. From the evidence of the finds from the early 20th century excavations and from the 1947 excavation of the Pound Lane site, it appears that Caerwent was founded in the late 1st century AD. The evidence for pottery production, metallurgy (iron and lead), leatherworking, woodworking, and the production of cloth are also studied, along with the situation of these trades within the town. With no major industry it appears that the economy of Caerwent depended on agriculture; many of the tools found in the town are of an agricultural nature. There are also several corn-drying kilns and the possibility of a few farm buildings associated with large walled yards. Finally, the defences and the end of occupation at Caerwent are looked at, the evidence pointing to some sort of habitation within the town continuing well into the 5th century AD.

Richard J. Brewer

The Origins of Monasticism in Britain

The origins of monasticism in Egypt and its spread to the West were described in order to assess the impact of this development and to point the way in which this study can assist in our understanding of the origins of the movement in Britain. The extent of indigenous origins was then debated. This was followed by a critical account of the archaeological evidence for the early British monastery in order to determine a monastic model and to stress the relationship with Ireland.

Finally, the relationship with the organisation of the early British Church was tentatively discussed. The conclusion, which made suggestions for future research, was followed by a Gazetteer of sites. The gazetteer was designed to complement the text and to provide a pool of critical information and references for the Early British Monastery.

N. R. H. Cary

Roman Military Spearheads and Projectiles from Britain

The dissertation consists of 2 parts, Part 1 being the text and Part 2 the figures, plates and tables. In Part 1 there are sections treating spearheads, plumbatae, pila, pila muralia, amenta, ferrules, arrowheads, catapult-bolt heads, stone artillery missiles, stones thrown by hand and slingshots. Each category of weapon is treated by sub-sections on ancient sources, sculpture, types of that weapon, comparisons with British Iron Age and Anglo-Saxon weapons from Britain, where these headings are relevant. The treatment of each category of weapon starts with an introduction and ends with a discussion. Published examples of spearheads and projectiles are catalogued on tables 1-16 in Part 2, together with details of each weapon's site date, measurements, the garrison of the site, and references to its place of publication. Each weapon has a unique catalogue number except for the stone artillery missiles and slingshots which, though listed in tables 15 & 16, did not have individual catalogue numbers assigned to them. A representative sample of the spearheads and projectiles are drawn out on figures 1-20. There are also sections entitled 'Garrisoning of Sites which have yielded weapons' and 'The manufacture and supply of weapons'.

It is hoped that the dissertation provides criteria with which one can differentiate between groups of spearheads, arrowheads, catapult-bolt heads and other weapons. The association of categories of weapons with different sorts of units of the Roman garrison of Britain is discussed in the discussion which ends the treatment of each weapon category. Only published spearheads and projectiles are surveyed in the dissertation; it is hoped that future work will cover unpublished material.

R. G. Densum

The making of the Romano British landscape; some aspects of settlement in the Cotswolds, Upper Thames Valley, Lower Severn Valley and the southern Vale of Evesham

The recent increase in fieldwork in this area has led to the discovery of a large number of new Romano-British sites, so many in fact that a new assessment of the Roman presence in the area seems necessary. Occupation seems to have been spread over the whole area, though in varying degrees of intensity. No longer does the landscape appear to be villa-dominated but rather the area is dotted with a wide variety of different types of farming establishments, though in the late 3rd and early 4th century large villa estates and their satellite holdings were extremely important. The settlements, including the major centres of Gloucester and Cirencester, all relied for their existence on the rich agricultural potential of the area, though other economic activities were also important. Many centres grew up originally because of non-economic factors; some could claim a degree of continuity from Iron Age settlements; some grew up around military establishments; some were route centres, and others religious centres. The civil authorities also played some part in influencing the distribution of settlement with the establishment of the colonia at Gloucester and the subsequent growth of occupation sites within its territorium.

Ian M. Ferris

A Fabric Study of The Iron Age Pottery from Bishopstone, Sussex

A simple method is described for analysing low fired pottery fabric. It concentrates upon a more scientific characterisation of wares, but examines the possibility of citing clay sources, with the results obtained. The Iron Age pottery from Bishopstone, near Newhaven, Sussex, a multiperiod downland settlement, provided the material for analysis. Using fabric as a basis, a particular hope was to achieve total assemblage coverage, thus accounting for thousands of undiagnostic sherds that many reports are forced to ignore. The association of fabrics and types, in closed groups, has been held more valuable than the creation of a ceramic series.

Susan D. Hamilton

***Canis* at Maiden Castle – a detailed restudy**

A detailed re-study was conducted on the extant remains of domestic dogs from Maiden Castle, Dorset. The remains fall into 2 disparate groups. One containing 2 of the small sample of known British Neolithic dogs, of the so-called 'Torfhund' type (*'Canis palustris Rut*) held at the British Museum (Natural History); and the other larger sample containing 10 Iron Age adult specimens (mostly skulls), exhibiting patently greater variation.

Part I includes a review of some of the literature affecting osteological studies, and particular attention is paid to mensuration systems in current use, such as Duerst's (1926) pioneering systematic study of mammalian skeletal anatomy, which contains, however, both errors (textual, diagrammatic) and spurious inclusions. Modern German researchers (v.d. Driesch, 1974) still evince a bias towards Duerst, and uncritical acceptance of certain genetically unconfirmed and otherwise variable measurements.

Part II contains a detailed morphological investigation of intra-group variability on the basis of a systematic comparison of all the Maiden Castle skulls, quantitative and illustrative, with additional concern expressed for the reliability of contextual association.

Part III attempts to introduce a computerised approach to treatment of British and Central European metrical data, with particular emphasis on the Iron Age. Difficulties in programming this data marred the possibility of testing the significance of certain as yet hypothetical assertions in canid taxonomy, and the value of commonly accepted measures of dispersion and variability.

D. J. Hayhow

The *Gallus* finds from Wicken Bonhunt

A large sample of *Gallus* bones of Middle Saxon age from the site of Wicken Bonhunt in Essex were examined with a view to establishing the general size and range of the birds represented, and their role in the local economy as indicated by determinations of such factors as age at death, sex and, if applicable, breed.

At least 217 individuals were represented. The majority were mature birds, which was thought to indicate a greater emphasis on egg production than meat. The ratio of males to females was approximately 1 to 5, and although there was some evidence for caponisation, this was inconclusive.

The sample was compared with several modern specimens, and with a few Roman and Iron Age finds. The Bonhunt fowl were found to be intermediate in size between the Iron Age sample, and modern medium sized laying breeds such as the White Leghorn. It was considered possible that the Bonhunt fowl might belong to 1 breed, whereas at least 2 breeds, 1 equal in size to some of the larger modern breeds, were represented by the Roman finds.

Sarah D. M. Macready

Charcoal from Roman villa sites

The analysis of charcoal samples is discussed. Reference is made to types of fuel in ironworking and kiln sites. The analysis of charcoal was used to determine the vegetation at 2 Roman sites, an Iron Age and a Bronze Age site. Woods specially selected by man are identified in the charcoals of 5 Roman sites and an early Iron Age site in Skye where it is possible that driftwood was present in the charcoals. The statistical use of charcoal is reviewed, and applied to samples as the 'Presence' concept, when individual charcoal samples are compared with data from pollen and land snails analysis. The comparability of these indices is investigated at a number of sites. Details are given of the author's work on charcoal samples from 'the most completely excavated Roman villa site in England', Winterton. Comparison is made with details of the pollen and molluscs from the site.

S. J. Mercer

Field-Walking as an Archaeological Prospecting Method: The Sussex Experience, 1973–75

In this report I have tried to call the attention of field archaeologists to the important role field-walking can play in field work. I distinguished between 2 aspects of field-walking, strategic and tactical, and argued that, at least at the operational level, it is justifiable to discuss this technique as an archaeological prospecting method.

Field-walking was related to other archaeological survey methods and I have emphasised the need to complement field-walking with such methods.

Factors to consider while planning a field-walking survey, as well as the problems of methods of walking, recording and analysis of finds were also treated. After discussing the limitations of this archaeological survey method I summarised the report and concluded that field-walking has a bright future as an archaeological survey method in Sussex.

T. A. Miachi

Pre-Industrial Ecological change on the South Downs as indicated by Land Molluscs

This work was based on mollusc samples taken during the Summer of 1975 from the sites of Rookery Hill, Bishopstone, and Alfriston, both in East Sussex. The samples ranged from Neolithic to Early Mediaeval times. The material from Bishopstone was extracted by wet-sieving; that from Alfriston was extracted on site by a Cambridge Froth Flotation Chamber. This gave an opportunity to assess the value of flotation devices in the extraction of molluscs.

The results indicated that Rookery Hill had been wooded at the time of the earliest Neolithic settlement. Clearance occurred rapidly as settlement became established. A Late Bronze Age land surface at Alfriston yielded a fauna suggesting abandonment after arable. By the Early Iron Age, Rookery Hill was under cultivation, yielding the specialised species favoured by arable conditions. Roman deposits at Rookery Hill yielded too few snails to be worth analysis, but a Roman deposit at Alfriston showed that ploughing was taking place there. An open environment pertained at Rookery Hill throughout the Saxon period, although there may have been a shift in emphasis from arable to pasture. Overlying post-Saxon deposits implied close-cropped pasture. Post-Saxon deposits at Alfriston yielded a fauna suggesting scrubby grassland with scattered bushes and shrubs.

A number of questions were raised by this work, notably the true status in this country of the species *Helicella virgata* (da Costa), *H. caperata* (Montagu), and *Cochlicella acuta* (Muller). All 3 are thought to be recent introductions, but shells of these species were found in Iron Age contexts at Rookery Hill. A little documentary research produced several parallels for this apparently anomalous situation.

T. P. O'Connor

Aspects of Art in Romano-British Pottery

A general survey of decoration on Romano-British coarse pottery was made in an attempt to isolate regional and chronological variation. Although some material lacked date and provenance, nevertheless some original styles were distinguished which should be capable of further development.

Dominic Perring

Flitwick Moor: Some Aspects of The Historic Environment

The River Flint drains an area just under 100 km² in Mid-Bedfordshire, and there are varying depths of peat developed along much of the valley. The largest expanse of peat is at Flitwick Moor, east of the village of Flitwick, and about 2 miles south of Amptill.

Today, 137 acres of the Moor are preserved as a Site of Special Scientific Interest, and form the largest area of unreclaimed marsh-land in Bedfordshire. Managed as a Nature Reserve, this area demonstrates an almost undisturbed successional series of habitats ranging from bare peat, through wet grassland, sphagnum bog, to alder carr and birch and oak woodland.

The archaeological evidence ranges from concentrations of Mesolithic flints, through to a series of Belgic and Romano-British settlements, centred near Ruxox Farm. In the 12th century Dunstable Priory established a monastic cell at Ruxox, and the documentary records reveal much about interests held by the surrounding villages in the moors, and the efforts made to drain and enclose. Later references focus more and more on these aspects of land improvement, especially from the 18th century onwards.

In view of all this, a pollen analysis of a boring made through the peat was made, and the results are discussed, both in relation to the natural environment, as exhibited on the Nature Reserve; and in relation to the activities and influences of man in the valley, from the earliest times to the present day.

H. Porter

Roman Latrines and Urban Sanitation: Current Work and Problems

Whilst generally regarded as hallmarks of Roman civility, latrines frequently receive brief identification and little else. This paper plunges *in medias res* and examines 3 aspects of Roman sanitation relevant to urban survival. Following an account of the administrative structuring responsible for town hygiene, and of the available classical sources, Part I discusses the functional, social and economic requirements of latrine design, assisted by an appendix (at the back) of detailed site descriptions from Britain, France, Italy, Greece and Africa. It is suggested that whilst individual examples of efficient design can be identified that indicate high standards were possible, sanitation in general facilitated larger settlement rather than improved conditions. Alternatives are surveyed, and the 2nd section is devoted to the contribution of the chamber pot to the system. Part III reviews current environmental work and focuses on the hazards of ill-maintained sewerage systems and the spread of disease within urban communities, with special reference to the late Empire. The text is illustrated by 8 half-plate photographs and 8 figures.

Mark Redknap

Rodent Post-Cranial material. An assessment of its value in Pleistocene Studies (with special reference to Bacon Hole, Gower, Wales)

A study was made of selected bones of small mammals in an attempt to differentiate between modern species on bone evidence (excluding teeth) alone. Small mammal bones found during excavation of Pleistocene cave deposits (thought to be Ipswichian in date) in Bacon Hole, Gower, were then compared with the modern bones to see if they could be assigned to modern species.

Measurements of femora and humeri were taken from modern and Pleistocene material. With these it was possible, using a computer and discriminant analysis, to separate the Pleistocene material into groups which broadly corresponded to the groups in the modern material (which in turn corresponded to modern species).

An interesting reduction in size, with time, of the Northern Vole (*Microtus oeconomus*) was observed.

Amanda Saunders

Roman Portrait-Statues: A Consideration of 5 Poses

I have chosen 5 Roman portrait statues: The 'Lucius' from Corinth, an Augustan standing nude male; The 'Petite Herculanaise', a standing draped female, probably Augustan; The Julio-Claudian 'Claudius' from Leptis Magna, a seated semi-draped male; The Provençale 'Mother and Daughter', a seated draped woman with a draped child standing beside her; and The 'Hadrian' from Adana, a standing figure in chiton and himation. I have considered Hellenistic statues in similar poses which could have influenced these figures, and looked at contemporary and late work, until the end of the 2nd century AD. I have compiled tables, marking those points in which the pose of each statue in the group resembles the one I am considering. The problems of survival, and poor dating of figures have hindered my conclusions, but it seems likely that the 'Lucius' and the 'Petite Herculanaise' copied particular Hellenistic statues, but less likely that the others did so, although some figures combine aspects of more than 1 statue; the drapery is the aspect which varies most; and these are specifically Roman innovations. Poses were not necessarily chosen for aesthetic reasons. A study of several groups of statues might lead to some conclusion, but work must first be done on dating more statues, if possible.

Diana Worsley

Book Reviews

CUNNINGTON, R. H. ed. James Dyer. *From antiquary to archaeologist: a biography of William Cunnington, 1754–1810*, Shire Publications Ltd., 1976. xviii + 178 p., 32 pls. £6.25.

Robert Cunnington's biography of his great-great-grandfather, left unpublished at the author's death, can be recommended to all those interested in the development of archaeology and the history of archaeological thought. Not only did he have family archives on which to base his researches, but also a strong background in his own years spent surveying sites for his aunt and uncle, Maud and Benjamin Cunnington. It is appropriate that he should continue to carry the banner of the archaeological Cunningtons. It is an orderly and well-written work, edited with a light hand by James Dyer and incorporating newly-discovered material, and with a masterly introduction by R. J. C. Atkinson that puts Cunnington's importance in its wider context and emphasises the pioneering nature of his work.

The partnership of Sir Richard Colt Hoare and William Cunnington, that resulted in the excavation of some 500 barrows and the publication of *Ancient Wiltshire*, and the worthy example and high standards that it set, is justly famous, but the evidence of Cunnington's letters reveals him to have been a man of independent and inquiring mind, 'unbiased by a classical education'; Colt Hoare provided the money and organisation, and the ability to write, but Cunnington was the field worker; together they made a formidable combination.

The letters, while revealing less than we would like about Cunnington's private life, show him, 'an ingenious inhabitant and tradesman' of Heytesbury, Wilts., to have been good-natured and tolerant, with the ability to form his own opinions, and change them when he found good reason, and yet never impatient with the views of others: the book contains a fascinating ding-dong exchange of views between himself and the antiquary Thomas Leman, pencilled alongside the excavation reports to Colt Hoare.

Previous researches have placed much of the emphasis on Colt Hoare: this book redresses the balance, perhaps a little too firmly. The plates, chosen by James Dyer, add to the interest of the narrative: there is even an appendix by Calvin Wells on the probable medical reason for Cunnington's headaches that forced him to outdoor exercise and thus excavation. A photograph of one of the Cunnington letters would have been interesting.

ISOBEL THOMPSON

FORDE-JOHNSTON, J. *Prehistoric Britain & Ireland*, J. M. Dent, 1976. 208 pp., 72 figs., 47 pls., £4.95.

The title of this new book from Dent's may lead some to expect a broad, narrative account of the prehistory of these islands of the kind produced in the past, when the story seemed simpler, and best exemplified, perhaps by Childe's *Prehistoric Communities of the British Isles*. The present volume is not one of these; certainly such an account would today need to be far longer, with a great deal more space allotted to Ireland, and indeed in the present state of our knowledge the task would be a daunting one.

Inevitably, any writer approaching the vast mass of knowledge now available needs to impose severe limitations in terms of period, place, or types of evidence to be examined. The author of this book has chosen the last of these, and seeks to present the story of British prehistory by examining certain aspects of material culture illustrated by ample and up-to-date information derived from recent research. It is perhaps a pity, then, that the title does not make it clear from the start that the book is primarily concerned with 'man and builder' and therefore with field monuments, the author believing that those 'non-portable antiquities . . . constitute a (2nd) body of evidence which is at least as important as the first (portable antiquities) and in some ways more important'. As a result, for example, the whole of the hunter-gatherer stage in these islands has to be omitted.

After an introductory chapter giving a brisk account of prehistory in general, and later British prehistory in particular, the remaining 8 chapters are devoted to the various classes of monument and their archaeological context: houses and settlements, megalithic tombs, ceremonial sites and so forth. A slight deviation from this pattern is found in chapter 3, 'The Windmill Hill People', which examines

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several groups of monuments attributed to this culture: causewayed enclosures, long barrows, cursus earthworks and flint mines.

For those who baulk at the complexities of mathematics, and especially geometry, there is an interesting chapter on circles and standing stones which covers the main sites and summarises the controversial work of Alexander Thom on the possible significance of these stone settings in the Late Neolithic and Early Bronze Age. The other chapters incorporate a good deal of information from recently published excavations – the section on large henges in the chapter on ceremonial sites, for example. A chapter on barrows and graves sets out clearly the standard information on this subject. Fortifications are dealt with in 2 chapters, the final one giving a brief resumé of the evidence from duns and brochs of the far north.

Some criticism there must be: when a whole chapter is devoted to ceremonial sites it seems strange that cursus earthworks – and indeed causewayed camps – are not included, but treated separately under 'The Windmill Hill People'. And surely one could quibble at the retention of such terms as 'Windmill Hill People', 'Secondary Neolithic' and, albeit fleetingly, 'Rinyo-Clacton'. Despite the obvious need for selectivity, one must also regret certain omissions, such as a chapter on round barrows which does not mention Silbury Hill – the largest man-made mound in Europe and of undoubted Late Neolithic/Early Bronze Age date (for the primary mound at least). More serious still is the complete absence of 1 well-known group of monuments – the souterrains of Cornwall, Scotland and Ireland which, although they were admittedly still being constructed well into the Roman and even early Christian period, are nevertheless an integral part of the early Iron Age cultures of some regions, especially Cornwall. It may be that these monuments have been excluded on the ground that they are not truly 'prehistoric' – yet this seems unlikely, since other aspects of Iron Age culture are included, such as brochs and wheelhouses in the north and courtyard houses in the south-west. Sensing, as one does, the author's concern with Man the Builder, the omission is all the more surprising since these structures constitute a notable group of stone-built monuments, comparable with those of the earlier prehistoric periods.

More general criticism must be directed at the index (which belies its name, being purely an index of sites) and although a restricted bibliography is given for each chapter, a rather fuller one including references to works mentioned in the text (such as that by F. Petersen on page 148) would help to make this book more useful to the student – as would source notes for the many excavations mentioned.

As it is, the book tends perhaps to fall between 2 stools: in places too detailed for a purely popular book, yet without the fuller information and reference material required in a useful text book. The volume is well produced, with good illustrations, reasonably priced for these days, and written in a clear and authoritative style which is eminently readable.

PATRICIA M. CHRISTIE

LANGMAID, Nancy G. *Bronze Age metalwork in England and Wales. Shire Archaeology Series.* Aylesbury, Shire Publication, 1976. 64 pp. 27 figs. £1.00.

This volume in the Shire Archaeology series presents a brief summary of the major metal types and metalworking techniques characteristic of the British Bronze Age. Clearly it is intended as a guide and as an often necessary supplement to museum displays and aims to isolate general trends and developments in the metalwork during the Bronze Age. At this level, the author succeeds in giving a well balanced summary of current views without risking the general reader becoming lost in a welter of particular details concerning types, dates, influences and origins.

However, anyone reading this volume should be warned that the work is less satisfactory at an interpretative level. There is every reason for an archaeologist to question the frenetic avoidance of anything to do with invasion or immigration that characterises interpretation in British prehistory these days but Mrs Langmaid seems to go to the other extreme and ignores the whole issue by perpetuating a 3 stage invasion thesis (Beaker, Urnfield, Halstatt) for the British Bronze Age. There would also seem to be no justification for such a volume in 1976 to describe Aegean colonists introducing copper metallurgy into Spain, for there to be evidence of direct connections between Cornwall and the Aegean in the Early Bronze Age or of Wessex Culture exports of gold, and amber having been found in Mycenae. Unfortunately the work is fairly well sprinkled with these more traditional interpretations that should at least have been qualified if the more up to date literature had been accounted for. However, with these reservations, the reader would find it a useful guide to museum displays and collections in this country and the volume also includes illustrations of some material not hitherto published and this is always to be welcomed.

M. J. ROWLANDS

BOOK REVIEWS

ROBERTS, Brian K. *Rural settlement in Britain*. Dawson Archon Books, Folkestone, 1977. 215 pp., 48 line and half-tone figs. £6.00.

This book is a survey of what is known and what ought to be known about the rural settlement of Britain from the earliest times to the present century. With such wide aims it is bound to be general in its coverage, though it presents many detailed and intriguing examples.

After setting the geographical and environmental background, complete with geomorphology and pollen analysis, the author gives us a chapter on Prehistory and the Romans, on Saxon and early medieval settlement, patterns of villages settlement, village forms, and farms and hamlets. Each section is provided with an excellent series of notes, and, if the notes to the prehistoric and Roman section can be taken as a fair sample the author quotes all the most interesting works, new and old, so that the reader may easily find his way into the detailed literature.

There is a rather sharp distinction which the author notes several times between the archaeological evidence, mainly before about 1500, and the topographical evidence, mainly after that date. Thus archaeology is good on sequences and dates, but very vague on ownership, use and relationships, while maps, plans and records present the other side of the picture. Sensibly, we are asked in this book to take each part of the evidence on its own merits, make up whatever pictures we can, consistent with that evidence, but always to be aware of the missing dimensions. This therefore is an essential book on any archaeological reading list for it always keeps in view the total picture of the British landscape.

I have one major criticism and that concerns most of the line drawings. These have either been sadly miscalculated by the author or savagely over-reduced by the publisher. My own guess is that they were drawn for 23 cm. x 14 cm. format and were never intended for their 15 cm. x 10 cm. frames. The result is lettering which can only be read, squinting, with 1 eye closed, under a bright light (e.g. Fig. 3) and the loss of fine detail as on Fig. 34. Such quibbles apart, this is an excellent introduction to a new subject.

RICHARD REECE

TYLER, A., *'Neolithic flint axes from the Cotswold Hills'*, 1976. 89 pp., 9 figs. Oxford (British Archaeological Reports 25). £1.90 (post-free from the publishers).

The series of *British Archaeological Reports* can in some ways be thought of as a County archaeological journal on a national scale, whose article appear as separate publications on account of their size. The *B.A.R.* under review takes its place as an extended note of the kind that many County publications carry at the end of each issue: and, appropriately enough, it marks the quarter century stage of the venture.

'Flint axes', essentially the author's undergraduate thesis for Cardiff University, consists mainly of a catalogue of somewhat more than 500 complete or fragmentary flaked or ground celts. This is preceded by 14 pages of text, of which only 5 are devoted to a discussion of the information presented: the emphasis is strongly on listing data, a welcome change from much contemporary writing. However, it is perhaps arguable that a simple distribution map (as appears at the end of this volume) would have been sufficient. It is difficult to imagine how anyone could use much of the data which Tyler presents, which could have been instead usefully deposited in a museum in the Cotswold district. This would reduce the size of the *Report* to an article of true journal size, where it would probably reach a wider audience than in its present form, priced at nearly £2.

It has long been common for local journals to carry notes on individual flint or stone celts, frequently illustrated with a drawing or photograph. Occasionally such notes carry implications of a local taxonomy arrived at by their authors, but more frequently (as with this *Report*) they simply list a number of basic (but not standardised) measurements (weight, length etc.). There are already well over 40 celt 'types' described in the literature by various writers at different times and in different areas, and a number of local taxonomic projects are currently in progress to add to these. It would seem that if any coherent descriptive structure that encompasses all of these objects is to emerge, a unique analytical scheme has to be applied universally. Current estimates of the quantity of flint celts in this country in museums range from 3 to 10,000 (the vagueness of this figure itself indicating the elementary stage at which work on these artefacts has reached), so it is hardly surprising that this task has not yet been achieved. It is a task that the present writer is attempting.

M. W. PITTS

BRANNIGAN, K., & FOWLER, P. J. (eds.) *The Roman West Country*, David and Charles, 33 plates, 46 figs. £7.95.

This book represents the published remains of a conference on the Romans in the West held in February 1973, and as such it is a very mixed bag containing articles which help, articles which hinder,

and just articles. Each one could be subjected to a full review, but there is not space for this, instead judgements must be brief, and therefore inevitably, personal.

The first two articles on military matters by Manning and Warmington follow a line which I judge illegal; they rehearse the textual information on the conquest and early military history of Britain and then try to attach archaeological facts to this framework. This is to muddle up 2 distinct sources of information which can only yield sense for me if they are kept separate. The 3rd article on coin hoards and history in the West, by Isaac, seems to fall into the same trap. His information seems to be sound but it needs an infusion of method to justify the results that he claims.

After this off-putting beginning the volume picks up. Hurst gives a review of Gloucester and McWhirr wisely avoids a review of Cirencester in favour of bringing together what we know of large houses in the town. Todd deals with the *vici* in his usual workmanlike way, and Branigan once more attacks villas. This attack is a distinct advance on his earlier skirmishes which, to me, lacked all conviction, and in this paper he is even useful in the pages in which he collects for us the agricultural evidence from villa sites. With Leech on larger agricultural settlements we move out on to the land and the scene is set for Fowler's survey entitled *Farmers and Fields*. This is clear, calm, relevant to the basic life of the region, and the best article in the book; in contrast to the general run of articles it actually uses the facts that it quotes and shows an affection for ideas. Elkington deals with the lead industry, and Thomas finishes up with a genial and balanced dismemberment of the Roman West leaving us, not at all surprisingly, in early medieval Cornwall.

RICHARD REECE

CASEY, J. and REECE, R. (eds.) *Coins and the Archaeologist*. Pp. 271, 4 plates. Oxford: British Archaeological Reports, 1974. £3.50.

This book contains 13 papers, most of which were given at a conference in London in 1973. They are concerned mainly with coins in Britain, and particularly Roman Britain. Three papers give very good surveys of general topics: Romano-British hoards by A. S. Robertson, Romano-British coin imitations by G. C. Boon and English medieval coins by M. M. Archibald.

Most of the other papers discuss methods of interpreting coin finds, which naturally fall into 2 groups: chance or site finds and hoards. J. P. C. Kent gives a wide ranging review of hoards, and his demonstration that there is no correlation between the pattern of hoards and military events during the English civil war prompts questions about historical inferences drawn from hoarding patterns of other periods (e.g. pp. 28 ff). The specific value of hoards to the archaeologist, however, is their definition of circulation patterns; M. M. Archibald has used this sort of evidence to great effect, and it is hoped that, for instance, R. Reece's discussion of bronze hoards will lead to general recognition of the fact that many (the majority?) of 2nd century coins were lost in c. 200–260.

Even if one can gauge the circulating lifetime of a coin, however, there are still pitfalls in the interpretation of site finds. J. Casey emphasises that one cannot say anything about a site from its coin list *in vacuo*; a comparison with other British sites is needed to avoid, e.g. the erroneous view that a site suffered from 'economic depression' in the early 3rd century because of an absence of coins of that period. Historical inferences can only be made from coin losses when these are seen in their regional perspective, as it is only then that significant variations can be seen.

For the Roman period the typical picture is fairly clear, and the mapping of such variations has begun (pp. 64 ff.). The next stage is to compare the picture in Britain with that of other areas. One might advocate here a more systematic look at hoards (cf. T. V. Buttrey *ANSMN* 1972), but R. Reece has applied the 'statistical revolution' to site finds. The regional differences are interesting, and while the general absence of coins from Britain is not very surprising for the early period in the light of what is known about the development of the province, the picture for the 4th century is more striking and prompts one to ask why relatively so many more 4th century coins were lost (and hence used) on British than on continental sites; and, conversely, why so little gold reached Britain in the 4th century (R. A. G. Carson in *The British Museum Yearbook* 1, 1976). Why do different areas of the Roman empire have different circulation patterns at all? For instance, why do barbarous and Gallic radiates abound in W. Asia Minor (D. J. MacDonald *AJA* 1974) and Africa? Is the reason economic or administrative?

'Which coins were used?' leads naturally to 'what were coins used for?'. D. M. Metcalf provides a stimulating estimate of the importance of coins in the economy of 7th and 8th century England. The same questions should be asked of the ancient British and Roman period (for instance, was Cunobelin's extensive bronze coinage socially important?), and we should look for the possibility of a changing role: e.g. does the distribution and sheer quantity of radiates suggest a change in the function of coins?

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This is a valuable book, for the information and ideas it contains and particularly for the questions it prompts. It is hoped that, despite its insular outlook, it will be read widely, for the methods it discusses could be used with great profit in other areas, both for the study of different regions themselves and to supplement the picture which is gradually emerging of coins and coinage in the whole of the Roman empire and medieval Europe.

A. M. BURNETT

CHADWICK, N. *The British Heroic Age; the Welsh and the Men of the North*. University of Wales Press, 1976, pp. 125, £3.00.

This is Mrs Chadwick's last work completed just before her death. Apart from the fact that the typescript represented a draft which would almost certainly have been revised had she lived, we are given no more information on how the book reached the press. It must be said at once that this mysterious process has not served the author well for there are many slips which she would have weeded out of the typescript with alacrity, which would have horrified her if they had ever come before her eyes in proofs. The slips divide into 2 classes, neither of which really matters, both of which could have been avoided by careful editing. The typing error obviously gives rise to Agricola campaigning in 84 BC and the Carthaginians exploring in the period before AD 460 (pp. 10 and 38) and these will entrap few readers. More serious is the obvious repetition (e.g. p. 64 repeated on p. 66) which stems from taking up the thread of writing after a break and getting back into the flow. This repetition in no way detracts from the argument of the book, but nevertheless a careful and considerate editor would have removed it. These are criticisms of the University of Wales press and their readers *not* of Mrs Chadwick or the book under review.

The argument of the book falls, rather uneasily, into 2 parts; the 1st a quick survey of British, as opposed to Roman, Britain, the 2nd and most important, a survey of the Men of the North, their families, culture, history, and traditions. The idea of the 1st part is valuable for it makes us aware that there is something of Britain outside the Roman frontiers that reacted with the Roman province and finally outlived it. It is therefore worthy of study on its own account and not just as an appendage. This short section however cannot be taken as a definitive survey, more an enticement to show that the job is worth doing and can be done.

The 2nd part devoted to the Men of the North allows Mrs Chadwick full reign and the narrative speeds ahead with a much surer touch than the earlier writing. Whatever the comments may be from the specialists who know the writings of this period in detail every archaeologist must be grateful to the author for putting life into a coherent set of people in a firm temporal and geographical setting. References to 'The British kingdoms of the North' have always seemed to me to be vague, to lack definition and clarity. I have always wondered why so much has been made of hints of Christianity in that no-mans-land between Yorkshire and Glasgow. Here I have found a fully satisfying answer; that region was, for a short time, the centre of vitality between a shadowy Pictland and a murky sub-Roman Britain. To breathe life into a no-mans-land is no mean achievement.

RICHARD REECE

FULFORD, Michael. *New Forest Pottery: Manufacture and Distribution, with a Corpus of the Pottery Types*, B.A.R. Publication No. 17., 1975. 200 pp., 61 figs. £3.90.

This fresh study on Roman ceramics is much more than just a comprehensive work on the New Forest pottery industry. Michael Fulford brings together a number of important ideas on the theory of pottery manufacture and distribution and shows what sort of light a study of pottery can shed on the economic history of a particular period.

The corpus, dealing fully with both fine and coarse (here termed grey) wares, is arranged in the form of a simple typology, which may be easily expanded on the discovery of new types. This will be the most useful part of the book for the excavator as it provides carefully dated parallels based predominantly on the controlled excavations at Portchester and Lankhills. The various discussions will be of interest to anybody concerned with the Roman period and to students of pottery in general and the latter should benefit considerably from this lucid presentation. Similar works appearing for the Oxford, Farnham and Nene Valley industries *inter alia*, would be of great value.

PAUL ARTHUR

BOOK REVIEWS

JOHNSON, S. *The Roman Forts of the Saxon Shore*. London, Elek, 1976. 171 pp. half-tone plates and figures throughout the text. £7.50.

The Saxon Shore and its forts has been a popular topic for short theses, for research projects, and for dissertations for many years, a popularity due to the simple fact that there has been, up to now, no simple and complete guide to this set of monuments. Now the situation has changed drastically, Mr Johnson has provided just what was needed, and any project or dissertation written hereafter can only be a weak regurgitation of this book.

A considerable amount of information has been put into only 154 pages of text (thus making it a price of 5p. per page) with the contents fairly clearly divided between clear and able description of the sites, chapters 3 and 5, a certain amount of background, chapters 1, 2, and 4, and interpretation, chapters 6, 7 and 8. The sites described are the British sites and the continental ones and this gives Mr Johnson his great advantage over other writers on this subject. He also derives great benefit from having prepared this book while working on a thesis on late Roman town defences so that the shore forts are seen as a sensible part of a continuous process both in theoretical strategy and highly practical planning and construction.

When we come to look for points to criticise 2 main factors appear, both of which are understandable and excusable, but both of which detract a little from the book's value. The 1st is the length of the book, the 2nd is the uniform validity given to all statements. The length of the book is little more than a quibble, but it does seem to fall between 2 possible targets. In a way it is too long; there is a little repetition, sometimes with the wording almost exactly repeated, and allied subjects are given uncomfortable pages or double pages giving us very potted information which really needs expanding or leaving out. Obviously the author has little control here, for there are certain lengths of book which it is economical to publish, and he must have been firmly in the publisher's hands.

In another way, the book is too short, and this leads us on to the uniform validity of all statements. Of necessity the book is an amalgam of personal observation, and points derived from reading and from conversation. The great strength of the book is the way in which the author has done his work so effectively that most of the material facts are derived from personal observation. But then there are the other classes of fact and these are not differentiated. This means that an absolute observation about the thickness of a wall rubs shoulders with Johnson's own comments about the coins from, say Portchester, in which he parts company from the coin report without saying so. The 1st is a certain verifiable fact, the 2nd is one of several possible opinions, and I would have been happier if the 2 could have been kept separate.

The final result of commendations and criticisms is the firm conviction that I want Mr Johnson to write a very much longer book on the Saxon Shore. In it he could correct the very few slips, such as his statement on p. 139 that . . . 'this absence of weaponry among men who were otherwise buried in full equipment is a surprising omission'. Weapon graves are almost unknown in full Roman contexts, this is simply never a part of Roman burial ritual, it only appears with Germanic influence in the later 4th century. He could also dissect out all those statements and terms which he has had to take for granted in the compass of this work and produce a fully analytical picture of this set of fortifications which he has so ably outlined.

RICHARD REECE

RODWELL, Warwick and ROWLEY, Trevor, (eds). *The 'Small Towns' of Roman Britain: Papers presented to a conference, Oxford. 1975*. British Archaeological Reports 15 (1975) 237 pp., 70 figs., 17 plates. £4.80.

The papers presented to this conference were divided into 2 groups, those about specific sites and those on more general topics concerning the 'Small Towns'. This format is retained in the volume. The papers on specific sites provide much valuable information, but for the long term the general papers are more important. Several of these papers (especially those by Warwick Rodwell and Stephen Johnson) present new and interesting ideas. However, these ideas are a development of the traditional view of Romano-British Towns which dominated the conference. This sees the towns in the context of Roman Britain, or more rarely the Empire as a whole. It is summed-up by Rivet's statement (p. 111) that 'a Romano-British town was a town when a Roman from another province would have recognised it as such'. Apart from the incompatibility of such a view with the archaeological evidence, it betrays an almost total unawareness of the broader problems of urban development. Most other archaeologists, geographers and sociologists studying towns are now concerned with a more universal approach to the study and definition of urbanism. Only the papers by Hodder and Alexander showed any real attempt to examine the Romano-British 'Small Towns' in this context.

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The remainder of the general papers were concerned with 2 main topics: origins and defences. Frere attempted to show that the 'Small Towns' were predominantly of military origin. He used figures to illustrate this, but did not state how many forts failed to develop into towns, thus his evidence was incomplete. Even if proven, military stimulus can only be part of the story as a certain pre-existing level of socio-economic development is surely a pre-condition of urban growth.

Wacher and Webster both covered the historical aspects of the 'Small Towns' defences despite the fact the Webster's paper was called 'Small Towns without Defences'. His paper was also remarkable in other respects: for instance his map of so-called 'fortified roads' (p. 54) fails to show 2 of these mentioned in his text (Stane Street and the Silchester-Chichester road, p. 59). Indeed the concept of the 'fortified road' in the narrow sense used here might well be questioned as all the defences are on roads, thus all roads are in this sense fortified.

Finally it is unfortunate to have to criticise Hodder whose paper was the most thought-provoking of the conferences. It was notable as the only one to use tests, rather than intuition, to distinguish between hypotheses (cf. Frere, pp. 4-5 and Rivet, p. 111). Such rigorous procedures could profitably have been applied in other of the papers. In this case they seem to have been wasted as Hodder's definition of the 'Small Towns' (the presence of walls) almost certainly predetermined his conclusions. He argued that 'the importance of a town in the 3rd and 4th centuries may be reflected in the building of surrounding walls' (p. 67). However, walls are a function of administrative, thus partially military, policy which in the Roman Empire is surely determined to a great extent by strategic considerations. Thus when comparing the actual locations of towns with military and economic models the use of walls in the definition made it likely that the military explanation would be favoured, as in practice it was. It would be interesting to see whether a broader definition produces results more compatible with the Central Place Theory.

Overall the volume is good value at £4.80, and the editors and publisher should be congratulated for such prompt publication so unusual in archaeology. However in the future one would hope for a broader approach, which would help towards a solution to the problems of urban development, rather than ignore them.

MARTIN MILLETT

STEAD, I. M. *Excavations at Winterton Roman Villa and other Roman sites in North Lincolnshire* Dept. of the Environment Archaeological Reports No. 9, HMSO, London 1976. 324 pages, 38 half tone plates, many line drawings in text. £25.

Criticism of another archaeologist's excavation report has all the dangers of criticising someone else's choice of boy or girl fiend. Why did you get involved with that particular one? What happened? What is the result?

Stead confesses in this volume his entanglements with several sites in North Lincolnshire beside the major event of Winterton; familiar names such as Old Witheringham and Dragonby appear together with less well known names like Roxby, Thealby and Messingham. This is only the first report on Winterton for the site has now been taken over by Roger Goodburn who has been hard at work since 1968, and, if each excavator takes a 10 year stint, we may expect Goodburn's report in the not too distant future. We might reasonably suggest, on the evidence of this volume, that Goodburn should seek a publisher other than the Stationery Office, for the Preface and several reports which are dated 1971 demonstrate unreasonable delay in getting into print.

To return to the opening comparison, which was intended at least partly seriously, the report must be assessed, however subjective a process that may be. There are 2 kernels in this book, the one a statement of the buildings which make up the excavated part of the Winterton villa, the phases of building, dimensions of walls and rooms the nature of floors and surfaces; the other a study of the pottery from Old Witheringham, the villa, and several kiln sites. These 2 subjects are statements of fact, what happened; they are written up clearly with excellent drawings, especially of the pottery, and there is little comment to make.

As with many entanglements the matter was not originally one of free choice. A short rescue season expanded and Winterton became for Stead a firm commitment. Not so firm however that the company of Belgic princes and Champagne could not draw him away. And here is that danger I mentioned, for consideration of an excavation report probably must entail asking questions about whether the site should have been dug, how the results should have been published, and whether it was all worth it. And all these points are as external to the excavator and writer as they are to the person in love: each is embroiled in an event which, in a way, precludes the use of judgment because evaluation depends on the final outcome, and that is unknowable during the event.

Before summing up in sweeping terms the other contributions must be mentioned for these include specialist reports on the mosaics, wall paintings, animal bones, Samian ware, mortaria, flints, and other finds from charcoals to a chamberpot. David Smith on the mosaics must be singled out for

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special mention together with the excellent mosaic drawings by David Neal, while the coins, the glass and the wall-paintings are discussed as well as described. Messrs. Higgs and Greenwood defuse any objection to their very short report on animal bones by pointing out that a full report would have taken up the whole volume by itself and that they therefore opted for a summary of results, but Denston on human bones is very disappointing for he draws very little extra information out of his straightforward lists.

So, finally, is this a good £25 worth of Roman Villa? Judged by the standards of the sixties, when the work was done, the answer is probably yes. The excavation was obviously meticulous, and the results of structures and finds are clearly written up and published in a way that allows full investigation by the reader of points not made in the text. And yet there are 60 pages of structural reporting, 215 pages of description of finds, and 14 pages of discussion as to what the villa was and how it worked. This seems to me to err on the side of facts, and to be rather thin on ideas. The facts are undoubtedly useful, and must be published, and any ideas not based on them would obviously be pointless in this context, but it is the ideas that deserve to be published, and it is ideas for which the customer might expect to pay £25.

I allow myself to voice these thoughts on this particular report because it is obviously a good report, with important information, well produced by an excellent archaeologist. There can therefore be no suspicion of disapproval or carping.

Supposing the text were photocopied it would cost, at present rates, about £8. If runs of over 50 were done the cost would come down below £4. If the D.O.E. were therefore truly concerned about the dissemination of archaeological facts knowledge of Winterton could be spread, even to students, at a reasonable cost. This would leave the author to publish a slightly extended summary of say 30 pages in a journal of wide circulation; a suitable replacement for the present lunatic rash of interim reports.

Perhaps it may be fair to add a postscript to the present excavator. Whereas this report has to be judged on the standards of the sixties, he will be judged on the standards and ideas of the seventies. The basic work of structures has been done, and additions to the plan can probably make only a small difference to the final results. We can give notice now that in the 2nd report we want to know what the villa was, what sort of estate or farm it controlled, what was its agriculture and chief means of money-making, how it related to surrounding settlements, and, from the cemetery, how many people lived there, how they were related, and what they believed. That will do for the 2nd report, we will let Goodburn off the difficult questions and reserve them for *his* successor.

RICHARD REECE

STRONG, Donald and BROWN, David (eds) *Roman Crafts*, pp. 256, colour plates 18, black and white illustrations 390. Duckworth, London 1976, £18.

In this volume 17 writers contribute 19 studies on Roman crafts and craftsmen. The topics covered are silver, bronze and pewter, enamel, jewellery, minting of coins, pottery, pottery lamps, terracottas, glass, iron smelting, iron smithing, woodwork, textiles, leather, marble sculpture, stucco, wall painting, wall and vault mosaics, and floor mosaics.

We now, therefore, have between 2 covers many of the contributions to a series of seminars which Henry Hodges and the late Donald Strong organised for the Roman and Conservation departments of the Institute of Archaeology in London. As the seminars were a mixed bag, so the essays present a very varied appearance, and the book is none the worse for that. The fruits of detailed theses (David Sherlock, W. H. Manning, Rogar Ling) appear between summaries of many years experience whether practical (David Sellwood, J. W. Waterer, Pamela Pratt) or academic (Sarnia Butcher, Reynold Higgs, Donald Strong). As always, such generalisations tell only part of the truth for David Sherlock's essay on silversmithing gains from his first hand experience in the art, David Neal's essay on floor mosaics comes from his experience of drawing and thinking about most of the mosaics which have been excavated in Britain in the past 15 years, and John Peter Wild's background in textiles as well as a thesis and book on the same subject make him a painless guide through warp and weft.

The book is a serious collection of very useful information and as such is obviously essential reading for any student who is intending to study any of the fields mentioned, or related. It is essentially a book for students and for libraries and should have a considerable life as a solid work of reference in libraries of universities, training colleges, schools, and perhaps especially the extra-mural archaeology book-box where all the members of an evening class tend to have their own specialities, trades and hobbies, and would no doubt respond very well indeed to the craftsmen in these essays. Once again Duckworth has published a set of very useful essays that could join their previous volumes on Domestication and Urbanism, as an essential archaeological text.

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Could – but won't. The volumes on Domestication and Urbanism were produced in straightforward, no nonsense, style in which you get at least weight for your money – in fact, much else besides; the hardback editions were followed by paperback so that instead of digesting the library copies some students actually bought their own. In this volume you get 250 pages of wastefully 'designed' text, with wide margins, in coffee table format. However good the essays they cannot be worth £18 even with the gross inflation of today. Few will buy the volume, and those who do, presumably as a coffee-table prestige, will be disappointed, for by their standards it is dull, factual, repetitive, and indigestible. Such a startling miscalculation is bound to be very depressing for the surviving editor, who has done excellent service in collecting and moulding together the articles, and to the authors. Let us hope that the publishers will see this for what it is, a single mistake, so that they return to their former ways and give us many more excellent volumes.

RICHARD REECE

CUNLIFFE, Barry. *Excavations at Portchester Castle Volume I: Roman (Reports of the Research Committee of the Society of Antiquaries of London, No. XXIII, 1975)*, xvi + 453 pp. 222 figs. 40 pls. £12.00.

The 1st volume of Professor Cunliffe's publication of his work at Portchester Castle, carried out between 1961 and 1962, deals with finds from the Roman period. Apart from deposits against the walls, much of the Roman material had been removed during later use of the site, but enough survived in the form of pits, gulleys and road surfaces to establish a basic chronology and to indicate the surprisingly untidy nature of the occupation. The fortifications of the Saxon Shore fort, first constructed c. AD 280, are discussed in detail; this is followed by full descriptions of the internal features, each with a list of finds and pottery and an efficient reference to the specialist finds reports.

The most important of these finds reports is by Michael Fulford on the pottery, which is published as a type series with indication of date and, where possible, of source. Fourth-century pottery is notoriously difficult to date closely: since virtually all that recovered from Portchester falls into 4 main periods between c. AD 280 and 345+, it has been possible to suggest date ranges for types in certain fine (New Forest, Oxfordshire, 'Pevensy') and coarse wares (Dorset black-burnished, Alice Holt, New Forest) commonly found in southern England. A detailed section on sources includes the results of heavy mineral analyses on 4 distinctive coarse wares.

An excellent discussion of the coins is contributed by Richard Reece. Other finds illustrated include a large quantity of metal and bone objects, small but useful groups of shale objects and glass, and a series of leather shoes. Comprehensive reports on the bones found are also included.

The publication is to the usual high standard of Antiquaries' reports. Professor Cunliffe continues to set a fine example for speed of publication: the subsequent volumes, on Saxon and later Portchester, appeared in 1976.

JOANNA BIRD

CUNLIFFE, Barry. *Excavations at Portchester Castle Volume II: Saxon (Reports of the Research Committee of the Society of Antiquaries of London, No. XXXIII 1976)*, x + 323pp. 161 figs. 26 pls., £12.00.

This 2nd volume of the report of the excavations at Portchester Castle, Hampshire, is a comprehensive survey of the evidence of Anglo-Saxon occupation on the site from the 5th to the 11th century. It includes excellent detailed descriptions, plans and sections of the structures, and specialist reports on the pottery, finds, burials, faunal and botanical remains.

One of the most important aspects of the report is the publication of the plans of 18 well-dated Anglo-Saxon domestic buildings. Five types of construction have been identified: 1) sunken-floored huts; 2) buildings with large, individually-set wall posts and no internal roof posts; 3) buildings with foundation trenches for the walls and no internal roof posts; 4) aisled buildings; and 5) a masonry tower. Professor Cunliffe writes (p. 60) that the 11th century aisled buildings from Portchester are of particular importance as, 'although the basic structural technique was well known and widely practised in the Roman periods and recurs again as a common style from the 12th century onwards, Saxon examples are unknown except at Portchester.' It is surprising that Professor Cunliffe fails to take into consideration the aisled hall of Edwin (616–32) excavated on the Anglo-Saxon royal site of Yeavering (Colvin, *The History of the King's Works* (London, 1963) I, Fig. 1), or smaller aisled buildings recently excavated on sites such as Thirlings, Northumberland (*Med. Archaeol.*, xviii (1974), 182 ff., Fig. 58; *ibid.*, xix (1975), 226 ff., Fig. 90). These earlier Anglo-Saxon aisled buildings give considerable support to the idea that the apparent scarcity of this construction during the period is largely due to

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the relatively small number of Anglo-Saxon domestic buildings which have been excavated until recently.

It is unfortunate that no attempt was made to draw hypothetical reconstructions of the most complete buildings on the site (S11, S13, S15), as excavated building plans can only be fully understood when considered as part of 3 dimensional structures. Another criticism must be the inconsistency in the use of the terms, 'grubenhaus' (p. 16), 'sunken-floor hut' (p.56), and 'sunken hut' (p. 306).

These criticisms apart, this report is a good illustration of the value of the monograph publication of a major site, and enables the reader to form a clear picture of Anglo-Saxon settlement within the Roman shore-fort of Portchester.

HILARY MURRAY

BRUCE-MITFORD, Rupert. *The Sutton Hoo Ship-Burial: Volume I*, British Museum Publications Limited, 1975, 792 pp., 440 figs., 13 plates. £45.00.

The appearance of *Sutton Hoo I* is a major event in archaeological publication: it heralds the last act in the Sutton Hoo saga, and, in addition, shows us something of the impressive standards of production of the British Museum's newly-founded publishing house. Volume I is to be the 1st of 3 volumes. It deals essentially with the site: its archaeology, environment and history of excavation. Volumes II and III will describe the 'grave' finds – the arms, armour and regalia – while Volume IV is planned to contain general essays and interpretative writings inspired by the different aspects of the find, as well as scientific reports produced by the British Museum Research Laboratory, describing their own highly significant contribution to the project. In all, the 3 volumes, when completed, will provide one of the most detailed and fascinating excavation reports so far published.

Volume I, compiled under the close guidance of Rupert Bruce-Mitford, who wrote the major part of the work, is full of meticulously presented information ranging from detailed environmental reports to widely-based historical discussions. The 1st chapter covers the history, topography and archaeology of the site, and includes Dr Longworth's account of the prehistoric occupation, supported by Professor Dimbleby's consideration of the changing environment. Chapters 2 to 4 deal with the excavations, including the preliminary work carried out in 1938, as well as the now-famous excavation of the ship burial which was undertaken in the summer of 1939. This is supplemented by the publication of a slightly shortened version of Mr C. W. Phillips' original excavation diary (chapter 12) and should be read in conjunction with Basil Brown's diary, covering the earlier work of 1938–9, which Bruce-Mitford has already published in his *Aspects of Anglo-Saxon Archaeology* (London 1974). These 2 accounts, together with that of the re-excavation, in 1965–1970, of the ship trench, the remains of the barrow and the spoil tips from the previous excavation (by Bruce-Mitford and Ashbee), make compulsive reading. These sections are of considerable significance not only to those interested in the history of archaeology, but in demonstrating that the actual process of excavation is an arduous experiment in which the excavator is (or should be) continuously refining his skills and technology. At a time when a certain arrogance and ill-founded self-assurance is beginning to manifest itself in the works of some of those professionally engaged in full-time excavation, these Sutton Hoo chapters are a salutary reminder that excavation requires to be controlled by an active human mind rather than a set of computer recording techniques.

After a full account of the ship remains and a useful inventory of all the finds from the burial, the authors turn to the 3 basic problems which have always surrounded the find: when did the burial take place; was the ship a cenotaph or a tomb; and which king (for the rich material must represent a royal personage) did the barrow commemorate? These matters are fully debated (in more than 200 pages), in which arguments range wide over archaeological and historical evidence, chemical analyses and numismatics. In summary, a reconsideration of the purse of 37 Merovingian coins suggests that they were amassed between 620 and 630, which would allow the burial to be related to the death of Raedwald, the High King of the East Angles, who died in 624 or 5. Moreover, Raedwald's known ambivalent attitude to Christianity neatly explains the otherwise puzzling mixture of pagan and Christian objects found in the deposit. The cenotaph problem is more difficult. Phosphate analysis of the burial chamber and the grave goods suggests that organic matter was buried in the centre of the ship, but whether or not it resulted from the decomposition of the King's body is beyond proof. These chapters have a value far beyond the confines of Saxon Archaeology. They constitute a beautifully presented example of intricate archaeological reasoning which should be read by everyone with an interest in archaeological method.

While *Sutton Hoo I* is primarily a detailed specialist report, its contents are presented in an attractive, human and frequently discursive manner which make it a joy to read. It could well be argued, however, that the text should have been considerably shortened and a large number of

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half-tone illustrations confined to the archive. While one must have sympathy with this viewpoint in general, Sutton Hoo is a special case. It is beyond doubt a site of great international importance and as such our national museum was fully justified in lavishing such care and attention on its preparation and publication. One cannot help fearing, however, that the appearance of this series will mark the end of an era in both the style of research and its publication.

BARRY CUNLIFFE

WILSON, D. M. ed. *The Archaeology of Anglo-Saxon England*. London, Methuen, 1976. 532 pp., 105 figs. 21 pls. £30.

In the words of the editor 'this book is intended to provide an authoritative source for at least part of the archaeology of the Anglo-Saxon period' (p. 1).

The emphasis is upon modern trends in research into the period which have received little attention in the past; certain subjects which have long been the centres of controversy – such as the Roman/Anglo-Saxon overlap, the vicissitudes of stylistic development and the typology of artifacts – are mentioned only briefly.

Secular settlement is the subject of the 1st 3 chapters. Fowler uses historical, topographical and archaeological evidence to discuss the factors determining the location of Anglo-Saxon settlements, and to suggest a model for the continued use of Roman estates. His work is a reflection of the increasing awareness by archaeologists that sites must be related to their agricultural settings. Secular buildings are analysed by Rahtz according to their date, context and method of construction, and their functions are discussed. This is a particularly well-illustrated and comprehensive synthesis to which an invaluable gazetteer is appended. Towns are defined and discussed by Biddle in the light of the evidence from recent excavations. There is perhaps a disproportionate emphasis on the planned and defended *burhs* of the 9th and 10th centuries, but to some extent this is due to the nature of the evidence. Romano-British foundations and the trading centres of the earliest period are adequately discussed, but one could hope for a fuller account of the unplanned commercial growths of the 11th century.

The diocesan and monastic aspects of Anglo-Saxon religious life are considered separately. Cherry abandons the usual approach of studying churches individually, and attempts to classify the churches of the early Saxon period by plan. Cramp provides a brief resumé of the various types of monastery to be found in Anglo-Saxon England, and gives accounts of excavated sites. The new plan and re-appraisal of the Whitby Abbey excavations are most noteworthy here.

The editor's general chapter on the materials, tools and products of Anglo-Saxon craftsmen, which brings together material from diverse sources, is supplemented by 2 more specialised studies. Hurst provides a new terminology and a clearly illustrated exposition of the various types of pottery which occur in Anglo-Saxon contexts, and he discusses the kilns in which they were made. Dolley explains the potential of coins, their history and the mechanics of their production, but unfortunately gives no illustrations of these most closely dateable of all archaeological artifacts.

In the penultimate chapter, Clutton-Brock makes a contribution towards the study of diet by an account of the animal resources, both domestic and wild, of the period. Finally the editor contributes another chapter on the Scandinavians in England. This brings together the available evidence, but is rather summary and lacks illustration.

As a synthesis and exposition of work done in the past, and of work in progress in certain fields, the book is successful. It is an invaluable aid to the study of Anglo-Saxon Archaeology at the present time, although its specialisation makes it difficult to comprehend the period as a whole from this book alone. In conclusion it may be said that, whilst £30 is a great deal to pay for a book when it is inevitable that several chapters will soon be outdated, such features as the gazetteer and the comprehensive bibliography ensure that this will remain a standard reference book for many years.

JANE ANDREW

RAISTRICK, Arthur. *Industrial Archaeology, an Historical Survey*. London, Eyre Methuen, 1972. xiii + 314 pp. 32 pls. 19 figs. £6.25.

MAJOR, J. Kenneth. *Fieldwork in Industrial Archaeology*. London, Batsford, 1976. 176 pp. 28 pls. 28 figs. £4.50.

Over the past 2 decades, 'Industrial Archaeology', a new post-war subject has been going from strength to strength with many new books now appearing each year, and, particularly in the industrial north of England, hundreds of enthusiasts seeking out and recording the many disappearing

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monuments of our industrial past. 1976 is in a way industrial archaeology's coming-of-age year because in 1955 the words 'industrial archaeology' were first used in print.

Among the many new 'handbooks' on industrial archaeology that have come out in the last few years Major's *Fieldwork in Industrial Archaeology* and Raistrick's *Industrial Archaeology, an Historical Survey* are two of the best. J. K. Major's book which is the second in a series dealing with archaeological fieldwork (C. C. Taylor's excellent *Fieldwork in Medieval Archaeology* was the first), is a fine practical handbook full of helpful information and advice for the amateur or serious student. Particularly good are the detailed chapters on 'measured drawings of industrial buildings' and 'publication of the results of fieldwork'. Both chapters can be recommended to the student of vernacular architecture as well, and show how useful J. K. Major's architectural background has been. There are also very useful sections on photography, research, private records, etc., and the book is introduced by two interesting chapters on 'the scope of fieldwork in industrial archaeology' and 'the various types of fieldwork'. It is also strange to find a handbook on industrial archaeology with a bias to the south of England.

Arthur Raistrick's book, on the other hand, is a far reaching historical survey of industrial archaeology with a decided northern bias. However, this having been said, one must go on to say that there are many examples taken from other parts of England as well, and unlike most books, which consider industrial archaeology to be the archaeology of the industrial revolution, Raistrick is at pains to point out from the start that this is too narrow a chronological time scale and his survey covers 'industry from pre-Roman times to the present'. After defining industrial archaeology as he sees it today (1971), he divides his book into 3 main parts. First we have 'The materials and Field Evidence of Industrial Archaeology' in which the various raw materials of industry are discussed in relation to the structures they leave behind. The second section is an historical summary with chapters on industries and their archaeological remains in Britain from earliest prehistoric times to the 19th century. The industrial revolution only covers 2 of the 5 chapters in this section. Finally we have a very interesting but brief final part on 'the place of Museums in Industrial Archaeology'.

Both books are therefore very useful additions to the ever-growing volume of literature on this new subject and have much in their pages to recommend them to all students and amateurs alike who are interested in recording and understanding Britain's enormous contribution to the growth of new industries throughout the world. Britain once led the world in her industrial revolution; she now leads the world in industrial archaeology!

T. W. T. TATTON-BROWN

ROBERTSON, N. ed., *The Archaeology of Cyprus: Recent Developments*. Noyes Press, Park Ridge, New Jersey 1975. 232 pp. Price not known.

The delay of the publication of the papers read at the first international colloquium on ancient Cyprus held at Brock University, Canada in October, 1971 in honour of Dr V. Karageorghis somewhat belies the title of the book. The 10 papers presented here cover a wide spectrum from the Early Cypriote to the Greek and Roman periods, those of greatest interest being the presentation of aspects of the results of excavations at Phlamoudhi and Soloi and a synthesis of various aspects of the unpublished material from the 1931 Pennsylvania excavations of 37 tombs from Lapithos ranging from E.C.II to M.C.II.

Ellen Herscher's paper on the Lapithos cemetery is clear and succinct dealing with the development of the pottery forms, the potter's marks, differentiation of a number of painters of the White Painted ware, intersite relationships, overseas connections and various possible religious cult symbols represented on the pottery. Photographs of 27 of the vases and a plan of the site are presented. The paper on Phlamoudhi is disappointing, no section being published for either of the 2 areas, Vounari and Melissa. Symenoglou's primary concern in this paper has been to try to determine the function of the buildings at Vounari but he has been hampered because 'the stratigraphy has not yet been clarified and would not in any case offer clear cut divisions of strata', and because of the very poor state of preservation of the walls, from which, in the plan published, he manages to differentiate 4 different levels of buildings. Des Gagniers gives a short history of the area of Soloi based on written sources, and a brief summary of his excavations there. The one plan published is that of a Christian basilica dating to the 4th century AD, and there are no sections of any part of the site. A group of Cypro-Geometric tombs possibly raise the date of Soloi to 9th century BC; certainly by 6th century BC it appears to have been a town of some importance. Amongst the architecture found was a Roman building which for some time was an industrial centre including a glass maker's shop and a dyer's shop. The 6th century city was destroyed in 497 BC and a large street and agora dating to 3rd century BC were found.

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Of the other papers presented Muhly attempts to simplify but merely confuses the problems of Near Eastern chronology. Teixidor makes a sketchy examination of the early Phoenician epigraphical material in Cyprus and concludes that it need not necessarily be dated earlier than 8th century. Merrillees on the problems of Cypriote history doubts that 'Alasiya' has anything to do with Cyprus and suggests that 'Tanaja', found in the Egyptian texts may refer to the island. T. Lynn Holmes, however, examines the texts mentioning 'Alasiya' and the material evidence for the island's commercial prosperity in the Late Bronze Age and sees no reason why 'Alasiya' should not be equated with part or all of Cyprus. Gittlen examines the White Slip ware contexts on the Levantine mainland and finds there no chronological distinction between Proto White Slip, White Slip I, and certain types of White Slip II nor any regional variation there in the distribution of these wares. Benson on birds on Cypro-Geometric pottery suggests a synthesis and use of the bird motifs of Mycenaean and Syro-Palestinian pottery by the Cypriote potters and distinguishes a workshop 'Nicosia Bichrome Bowls' which includes the majority of the known Cypro-Geometric III vases. This ability of the Cypriotes to borrow from the countries around them and produce a new and highly individualistic art is particularly evident in Kahane's study of the Cesnola Geometric Krater from Kourion.

The papers in this book present a wide variety of topics and standards.

M. L. G. MacLAURIN

BENAC, A. OBRE II (a neolithic settlement of the Butmir group at Gornje Polje), and OBRE I (a neolithic settlement of the Starčevo-Impresso and Kakanj cultures at Raskršće). *Wissenschaftliche Mitteilungen des Bosnisch-Herzegowinischen Landesmuseums* (Sarajevo), III A. 1973, c. 475 pp., 103 plates, 41 figs. Price not known.

Attention should be drawn to this volume, written throughout in English, as an important source of factual information about the neolithic of the later fifth and earlier fourth millennia in The Bosna Valley of west-central Yugoslavia, a region for which the publication sets an altogether new and high standard. It is effectively a monograph covering 2 sites which lie some 150 metres apart. Obre I is the earlier, and contains material which begins with an assemblage related to the Temperate European Impressed Wares of the First Temperate Neolithic, including its distinctive forms of painted ware, rod-head figurines and bone spoons. It continues with a Kakanj assemblage – roughly contemporary with Vinča A1 and 2, and equally clearly having relationships with the Adriatic coast. This really summarises the important intermediary geographical position of Bosnia for this part of the world. The adjacent site of Obre II contains Danilo material, also related to the Adriatic, but showing signs of a basis in the local Kakanj. The whole body of material therefore merits careful study, and the gratifying thing is that here we have a publication which makes this possible, and from which every researcher will be able to draw facts to illuminate his particular problem. There is therefore no point in summarising the content of the work. The point is to draw the attention of English speaking students to the fact that behind the cover of a Sarajevo museum publication with a German title there lies a monograph in English which advances the standards of publication for this region. General and particular features of the excavations are illustrated, much of the painted pottery in colour for example, with information on house remains as well as their contents. Radiocarbon chronology is not emphasised, although a particular feature of the remains, especially from Obre II, is the amount of information preserved on organic components of house and oven structure (wattle, wood, etc). Further information on these sites can be found in recent numbers of the Sarajevo museum bulletin (*Glasnik zemaljskog muzeja*) and in *Archaeology* 1970; 287, but it is in the main brought together here in one useful volume, containing many points of interest relating to neolithic settlement, burials, technology and economy.

JOHN NANDRIS

MISKOVSKY, Jean-Claude. *Le Quarternaire du Midi Méditerranéen: Stratigraphie et paléoclimatologie*. Laboratoire de Paléontologie Humaine et de Préhistoire. Mémoire No. 3. Marseille, Université de Provence, 1974. 331 pp., 176 figs., 11 pls. 120 fr.

This study covers the cave sequences in the area of S.E. France from Perpignan in the west to the caves of the Italian Riviera in the east. During the last few years an enormous amount of excavation has been done in this area providing a series of long sequences covering the whole of the Pleistocene.

The author is primarily a sedimentologist and therefore the sediment analysis of the sites forms the main part of the study, but with results supported by data from other disciplines. In this respect the coastal area has provided, through the fossil beaches, a solid framework into which the smaller chronological units can be fitted.

The subject is dealt with in chronological order, starting with the terrace sequences of the river Tet, near Perpignan. The exact status of the archaeological material, which includes polyhedrals and chopping tools, is not very clear as they appear to be on the terraces rather than in them.

The first of the cave sequences is that of Vallonet, whose archaeological content is now well known. The Vallonet deposits, according to the excavators, follow a late Calabrian feature and the fauna suggests that they belong to the regression immediately following.

The key section representing the Mindel is Terra Amata with a rich fauna and a succession of Acheulian habitations. The Mindel deposits are capped by fossil soils claimed to belong to the succeeding Mindel/Riss Interglacial. Similar fossil soils have been found at other sites in the area.

The Riss glaciation is covered by the long section at Lazaret. These deposits rest on a Mindel/Riss beach complex and continue the sequence up to Riss III with an Upper Acheulian.

The upper part of the sequence, from the end of Riss to the early post-Glacial, is covered by more sites than are available for the earlier stages.

The conclusions are a summary of each major chronological stage and of a chart pulling the data from various disciplines together. There is also a comparison of some sites from the Languedoc with some from the Perigord region, with very close agreement.

While a very critical appraisal of the sedimentological data needs a specialist, for the archaeologist this is an extremely useful book, with a wealth of information on the sequences covering a large number of sites, plus valuable climatic data. Only a few sites have illustrations of the archaeological material, but this is not a defect since this was not the author's intention. In the front there is a useful summary in English and German.

J. d'A. WAECHTER

KARAGEORGHIS, V. *Kition: Mycenaean and Phoenician Discoveries in Cyprus*. London, Thames and Hudson, 1976. 184 pp., 20 colour plates, 106 monochrome plates, 27 line drawings. £7.50.

Not a site report but an architectural synthesis of Dr Karageorghis' excavations at Kition on the south coast of Cyprus, it is written for the interested amateur rather than the professional archaeologist. As such it unfolds clearly the history of the 2 areas excavated. The smaller Area I, within the modern town of Larnaca, revealed a rectangular room of 13th century BC containing traces of copper slag and furnaces for smelting. After a gap long enough for the rectangular room to fall into ruins (Dr Karageorghis postulates about 20 years), new houses dating down to the Cypro-Geometric I period with Mycenaean III 1b pottery on the floors were built on the levelled off rubble.

Of greater interest is Area II, incorporating part of the city wall and the 'sacred area' with their architectural development. The first city wall built of mud brick on stone rubble rested on bedrock and has bastions of ashlar blocks. These were incorporated in the late 13th century BC cyclopean wall built on the mud brick collapse of the previous wall.

In the 'sacred area', 1 (temple 3) of the 2 sanctuaries of the early 13th century, which Dr Karageorghis compares to the temples at Lachish and Tell el Farah, was levelled off in the late 13th century and a new temple (1) built. The other temple (2) was retained but each now had an open air temenos associated with it, and temple 4 was built against the city wall. This reconstruction which lasted until the end of the Late Cypriote period Dr Karageorghis assigns to the arrival of the Achaeans.

After a 150-year gap, a new temple of 9th century was built on the foundations of temple 1 and 4; temple 2 was not retained. It is this rebuilding that Dr Karageorghis attributes to the Phoenicians – Samaria were shallow bowls being found on the floor of the earliest courtyard of temple 1, as well as Red Slip juglets. He postulates that Phoenician expansion began to the west, at least in Cyprus, in 9th century. The copper workshops and the 'ingot gods' found there give adequate reason for Phoenician interest in the port and the temples.

A plan of each phase of the temples with photographs is included as well as a section against the first city wall and one across the north wall of temple 1 in Area II.

A picture of a cosmopolitan port with contacts both east and west is painted by the finds at Kition. Late Minoan pottery, Late Mycenaean pottery (the contents of the tombs displayed a very high proportion of this and gave rise to the author's questioning the area of production of this ware), the Syro-Palestinian pottery, the temple furnishings and architecture point to a prosperous time in the history of Kition.

The book is a popular account of Dr Karageorghis' lecture 'Kition: Mycenaean and Phoenician' given in London (1973), with the additional publication of Early Cypriote, Late Cypriote and Built Tombs. The appearance of 'Excavations at Kition: I. The Tombs' in 1974 anticipates the final report of these 2 areas with the pottery and small finds and their related levels and architectural features.

M. L. G. MacLAURIN

CUNLIFFE, Barry and ROWLEY, Trevor, eds. *Oppida: the beginnings of urbanisation in barbarian Europe*. Papers presented to a conference at Oxford, October 1975; *British Archaeological Reports*, supplementary series II, 1976. 367 pp. Illustrated. £6.75.

It is a credit to *BAR* to have produced in print only a year later the papers given at a stimulating and very varied conference: they include Collis on trading and markets in Iron Age Europe in general; more localised studies by Eva Petres on Hungary, Jiří Břeň on Czechoslovakia, Daphne Nash on central France; Colin Haselgrove on general principles of trade as a stimulus, especially in Britain, Cunliffe on the urbanising process in southern central England and its hill-forts, a modified version of earlier ideas; Jeffrey May on his work in Lincolnshire and Warwick Rodwell's massive (half the book) dissertation on 'Coinage, oppida and the rise of Belgic power in south-eastern Britain', in which Allen's coin distributions are brought up to date, and many new ideas formed on both the coinage and their use as an historical model.

These papers are required reading for anyone concerned with the late pre-Roman Iron Age and the fascinating process of social and economic change that was prevented from reaching its independent potential by the Roman conquest of Gaul and Britain. It is interesting to compare the various ideas of Collis, Cunliffe, and Rodwell regarding the mechanics of this process; it is perhaps because the Roman conquest cut it short that the clues to incipient urbanisation are so liable to varying interpretation. The central European contributions are welcome since they provide useful material in an easily accessible form.

The chief contribution, in terms of ideas as well as size, is Rodwell's. In one sense he reviews what we might call 'Belgic studies' to date: he is not one to fight shy of the term 'Belgic'. His is the valuable function of the stone being hurled into a millpond: he expresses his own ideas concerning not only the coinage, but on pottery, Arretine, Caesar, tribal definitions, Gallo-Belgic imports, dynasties, dating, amphorae, salt, and settlement types as well. There are many who will disagree with some or all of the ideas expressed, but this, of course, is all to the good: more discussion and less complacency with previous notions is what the subject needs.

To take just one instance here, Rodwell singles out certain examples of pottery that he chooses to consider 'Belgic coarse pottery', that he claims support the definition of Birchall's 'Earliest' and 'Early' wares. These are pots chosen at random from a number of sites to make up a range of vessels: 'stylistically and geographically the pottery holds together as a cohesive unit' (p. 234). In fact this is the old attempt to fill the gap between the 'evidence' for a 'Belgic invasion' provided by the coins, apparently from the late 2nd century BC and the 'evidence' for the same provided by the pottery of the late 1st century BC. However, there are those who would disagree on the date of the introduction of coinage in Britain; others who regard the literary tradition of the 'Belgae' as misleading and certainly to be avoided in the treatment of *archaeological* data. We may also observe that Birchall's division of the Aylesford and Swarling pottery does not stand up to critical examination; and Rodwell cannot select the coarsest pottery types on this basis and claim with any confidence that they are, therefore, earliest. He is quite right in drawing attention to the uncritical dating of many sites, but he should not use this to create a circular argument.

ISOBEL THOMPSON

SCULLARD, H. H. *The Elephant in the Greek and Roman World*. Thames and Hudson, 1974. 288 pp. 24 pls. 24 text figures. £6.50.

This book is part of a series which has already produced some distinguished studies on aspects of Roman and Greek society and environment. This 20th volume, by the general editor of the series, is a long way from his previous work on *Scipio Africanus: soldier and politician*. Again, it is highly specialised if not verging on the exotic. Beyond the importance of its ivory, the elephant was to the Classical world what the tank was in World War I — both in terms of its limited capabilities and its value as a psychological weapon. They were certainly used intermittently in battles and sieges over a wide area, from Spain and North Africa to South-west Asia. Although today the elephant is unlikely to occur in any numbers in any of these areas, except as part of a circus, there is no doubt that the imported population of the 2 living species into these areas during classical times may have been relatively large. And they were available in numbers not so far away; for instance an envoy of Justinian had noted nearly 5000 in one region of the Axumite kingdom of Ethiopia.

The book is sensibly divided up, beginning with a general account of the natural history (and prehistory) of elephants. Although first mentioned in the Greek literature by Herodotus, it was Aristotle who produced detailed accounts, and these are dealt with at some length. Alexander and his successors are considered in some detail, including various battle strategies involving elephants.

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Pyrrhus; the Seleucids and Ptolemies are considered to a similar extent. Pliny and other later writers provide yet further information. Finally there is a rounding-off chapter on the elephant in war and peace.

This is an original, readable and worthwhile review.

DON BROTHWELL

WARDMAN, Alan, *Rome's Debt to Greece*. Elek Books, London 1976. xix + 201. £5.50.

The title of this book carries the promise of a much needed survey of the relationship between the two most important cultures within the Roman Empire. In the event, Wardman's aims appear to have been limited to a discussion of the attitudes and opinions of educated Romans within the governing elite to the Greeks and their literature in the late Republic and the Early Empire. He demonstrates their profound debt to Greek letters, especially in matters of style (but also in content where, as in the case of philosophy, no native tradition existed); at the same time these 'Romans' were intensely proud of the Latin Language and had no doubt of the superiority of Roman moral character to that of the clever Greeks. Greek art which was often brought to Rome in the wake of conquest, excited the suspicions of some moralists for its possible corrupting influences on those who came to own it, but it was generally acceptable when dedicated to the gods in temples.

Despite the wealth of references and the author's agreeable style, there are no new insights here. The book lacks any reference to social history and, surprisingly, to archaeology. As Gisela Richter demonstrated in her fine study, *Ancient Italy* (1955), the demand for copies of Classical sculpture provided work for many a Greek artisan. Beyond this, of course, Greek artists were still capable of producing masterpieces for their Roman patrons. The Lesser Propylon at Eleusis, mentioned (p.20) as a piece of self-advertisement on the part of Appius Claudius Pulcher, is a case in point; the *Ara Pacis* and *Gemma Augustea* are even more central to the theme of Greek art in the service of Rome, but Donald Strong's *Roman Imperial Sculpture* (1961) is not even listed in the bibliography.

There is a hint of the book which should have been written when Wardman comes to discuss philhellenism in the 2nd century (pp. 38 f.). He rightly singles out Hadrian's respect for Greece and the formation of an assembly called the *Panhellenion* which although 'hardly a political body' surely mirrored the Roman senate, however dimly. From such slight beginnings we may observe how Greek influence in Roman politics and society grew even stronger. Dio Cassius wrote his history (in Greek) in the reign of the oriental, Alexander Severus; Plotinus reinterpreted Platonic philosophy at the court of Gallienus; Eusebius of Caesarea chronicled the story of Christianity for Constantine (who implicitly recognised that the nerve-centre of the Empire lay in the Greek east by placing his new capital on the site of Byzantium). By an irony of fate the Emperor Julian who wrote and thought in Greek was the last great champion of Roman power across the Rhine. His exploits were recorded in Latin by a historian not unworthy of Tacitus although Ammianus Marcellinus was 'miles quondam et Graecus'. However the future of 'Rome' was to lie in Greek hands for 800 years to come; its laws and institutions of government demonstrate that alongside Rome's debt to Greece, the once despised Greeks had some reason to be grateful to Cicero and his contemporaries, however narrow and blinkered their vision had been.

MARTIN HENIG

CHEVALLIER, Raymond, *Roman Roads*. London, Batsford, 1976. x + 272 pp. 40 Figs. £9.50.

At last a book *about* Roman roads! Since the volume of Grenier's *Manuel d'archéologie gallo-romaine* examining roads became unobtainable, there has been no easily available work on the subject. This translation of Raymond Chevallier's *Les Voies Romaines* (originally published in 1972 as one of the *Histoire Ancienne* series, Librairie Armand Colin) attempts to plug this gap in current Roman historical literature and provides for the first time in the English language a work concerned with the general aspects of Roman roads and not the course or identification of individual examples.

But the reader must look sharp as the book is characteristically French, as Professor Rivet points out in his foreword, and the one prevailing characteristic is the presentation of a compilation of a great body of information, admittedly assiduously documented, without close critical examination or in an argued framework. The reader must often employ his own critical judgement. However, the sheer amount of information contained in the book, especially in the magnificent bibliography, overrides this trait.

The book is divided into 5 chapters. The first deals with the evidence from literature and inscriptions including the Peutinger Table, the various Itineraries, the Rudge Cup *et al.*; the second discusses the archaeology of Roman roads, – town streets, the Orange cadaster and centuriation, road construction, bridges, how to search for Roman roads and a small section on the significance of

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modern place-names. The third chapter provides brief synopses, country by country, of the known road-network of the Roman empire. The next chapter is titled 'Life on the road' and discusses vehicles (an area where a vast amount of work needs to be done), the *cursus publicus* and its stations, the *annona* collection, the speed of news transmission and the collection of customs dues. The final chapter is a postscript of more philosophical nature concerned with the function, effect and later survival of Roman roads.

To sum up; there is much to admire in this book and there is much that the critical reader will want to question, but Monsieur Chevallier has done a great service by collecting the material together and providing a *handbuch* for the study of Roman roads.

HUGH CHAPMAN

WALKER, D. R., *The Metrology of the Roman silver coinage, part I: Augustus to Domitian*, BAR Supplementary series 5, Oxford 1976. 159 pp. Many text figs and tables. £2.50.

In this volume Mr Walker has put forward the results of a research programme into the metrology of the silver coinage of the Mediterranean area based on a substantial series of coin analyses by X-ray fluorescence spectrometry. He admits in his introduction that the method has its uncertainties, and that the results quoted may be slightly different from the results which would have been obtained from destructive 'wet' chemical analyses; the value of the work lies therefore in the number of analyses performed and the *relative* silver contents demonstrated in the different coinages.

Mr Walker has followed the excellent precedent set by Kraay and Sutherland, in the first volume of their catalogue of Roman coins in the Ashmolean Museum, of taking in all the local coinages produced by cities and provinces as well as the central Imperial coinage of Rome and Lyon. Thus he gives us chapters on the Cistophoroi of Asia, the drachm coinages of Caesarea in Cappadocia, and Crete, Tyre, and Antioch, as well as the neglected subject of Alexandria. All these more or less local coinages are made to fit in with the Imperial standards, in some cases more convincingly and more easily than others, so that, for the first time it is possible to see an overall view of silver coinage in the early Roman Empire.

Together with this global view we also get considerable detail. For instance the first table gives us the silver contents of 41 denarii of Augustus from the Italian mint struck between c. 30 and 27 BC. We therefore get a mean weight (3.64 gm.) and a mean silver content (96.84%) with a useful standard deviation of $\pm 0.39\%$. Walker always expresses these two values of weight and silver content as 'Weight of silver per coin' and this extra step seems fully justified by the way in which this value is almost always more closely controlled than any other. This starts to throw light on the workings of various mints – only one of the trains of thought which will no doubt grow from this excellent project.

RICHARD REECE

LANG, D. M., *The Bulgarians from pagan times to the Ottoman Conquest*. London, Thames and Hudson, Ancient Peoples and Places. 208 pp. 62 plates, 42 figures. £8.50.

Bulgaria is relatively unknown in Western Europe except to the tourist or specialist. The public received some idea of its artistic achievements in ancient times from the recent exhibition of Thracian treasures at the British Museum. Bulgaria's position on the edge of the Mediterranean world, yet closely linked to Central Asia, meant that in the Middle Ages it was artistically and culturally no less rich or distinctive. If that exhibition aroused a wider interest, then Prof. Lang's excellent introduction to medieval Bulgaria will make an important contribution to satisfying it. The book is clear and its range broad: the vicissitudes of the 2 Bulgarian empires are described in detail, and chapters are devoted to the Bogomil heresy, literature and the arts. For the tourist, it will be a valuable handbook, but the more serious reader or the archaeologist will find it less stimulating. Too often it lapses into a pedestrian catalogue of events and facts, and it is unilluminated by any historical sense, failing to assess the development of Bulgaria or its achievements against the background of the Byzantine world or Europe as a whole. Prof. Lang confesses his newness to Bulgarian studies, and it is not surprising that he is most interesting and authoritative when dealing with literature and cultural topics closer to his own subjects.

From the archaeological point of view, the book is tantalising, though it has to be conceded that this series is not primarily archaeological in scope. Bulgaria is rich in sites of all periods. At the close of the Roman era, it was a land of passage, the gateway to the Balkan peninsula, for the migrating peoples of Central Asia. It was an area crucial to the defence of Constantinople, though the Danube and the Balkan and Rhodope ranges proved ineffective as natural barriers. There is much archaeological evidence for the effects of the successive invasions, and the gradual collapse of civilised

life. Driven from their home in the North Caucasian steppe and the Ukraine by the Khazars, the Bulgars established from the end of the 7th century an empire which in power and cultural attainments may be compared to the Carolingians in the West. Their first capital, Pliska, was one of the more imposing cities of its time. Built of stone and brick, it was surrounded by defences which enclosed an area of 9 square miles. It was supplied with running water, and its palaces had baths with hypocausts. Much of it has been excavated and it warrants more ample treatment than the few paragraphs and 3 plates which Prof. Lang allows it. He also neglects to mention the controversy over whether it was preceded by an earlier settlement. Conversion to Christianity in the 9th century, and an interval of Byzantine rule, meant that by the time the Bulgars regained their independence at the end of the 12th century they had become culturally absorbed by the Byzantine world. Their fates were interlocked, and the second Bulgarian empire fell to the Turks only 60 years before Constantinople. Prof. Lang describes in some detail the more notable of the churches and monasteries of this period, and discusses frescoes and manuscript illumination. Of towns, secular architecture and archaeological sites, much less is said. A *graffita* dish (plate 56) gives some idea of the artefacts in use. But should this be treated as evidence of trade with Constantinople and the Mediterranean, or was this pottery made locally? It would be interesting to know more of these things, to have a book on the medieval archaeology of Bulgaria comparable to R. F. Hodkinson's 'Bulgaria in Antiquity'. It should be noted that the latter costs £1 less than 'The Bulgarians'. Prof. Lang has been ill-served by his publishers. A leap of £5 in the price of the Ancient Peoples and Places series will have taken it outside the range of many people's pockets. The brevity of the volumes, and their defects – notably the separation of plates from text, and the plates themselves from their captions – mean that some improvement in format is surely necessary if they are to remain good value.

DAVID ANDREWS

DIXON, Philip. *Barbarian Europe*. Making of the Past series: pp. 151, 151 illustrations (122 in colour), glossary and index. Elsevier Phaidon, Oxford, 1976. £4.50.

Writing a book in a series which already has a format and gimmicks built in by eager production assistants and arty designers (not to mention the Advisory Board) must always be a fight between author and publisher. In this case the result is almost a tie – Dixon wins on the text – except for a few gross spelling mistakes like defense and armor, and exerts strong influences on the illustrations, but the publishers win on gimmicks and format. Even the most critical reviewer could not suspect that this author would interrupt his narrative text 4 times in 151 pages for a quick 'Visual story' – especially when the first one is used as a means of dragging the obligatory Arthur into the limelight.

Into the short text Dixon has had to compress an impression of the Barbarian kingdoms which followed the dismemberment of the western half of the Roman Empire, with time limits of roughly AD 400–1000. Basically he has succeeded and he has encouraged, bullied or wheedled the publishers into providing a series of illustrations which add a great deal to the text. This is to judge the book on its own aims and estimation; anything other would be irresponsible reviewing. Every specialist who reads the book will have a short list of corrections, of changes in emphasis required, or of unjustifiable omissions; but such lists cannot detract from the fact that the author has given a general introduction to Europe in 400 to 1000 from which every general reader will profit. My own list of objections would start with the omission of the redoubtable Galla Placidia, who, as hostage to Alaric, wife of Athaulf, converter of Athaulf, wife of the Patrician and Emperor Constantius III and mother of Valentinian III has claims to be one of the most remarkable human bridges between Romans and Goths. Tintagel is given more space than it deserves now that very severe doubt has been cast on the early dating of the excavated buildings, and hence most justification for calling it a monastery has been removed. In a book whose avowed aim is to weld together history and archaeology (impossible and illegitimate task) the Carolingian period might have been helped by mention of the château, or whatever it should be called, at Doué la Fontaine, excavated with great devotion by M de Bouard. But these are minor points in a work with such a wide coverage.

One criticism that can legitimately be made is a criticism of the period under review rather than the author. Whereas the Goths are dealt with most archaeologically, the Carolingian empire is almost completely a historical episode. This is the state of Early Medieval Studies, and it is a very nasty, illogical, ingrowing mess. After flexing his muscles on this excellent and up-to-date introduction to the mess will Mr Dixon please get stuck into sorting it all out?

RICHARD REECE

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AVI-YONAH, M., ed., *Encyclopedia of Archaeological Excavations in the Holy Land*. Jerusalem & London, Masada Press & Oxford University Press, 1975 – Vol. 1, 339 pp. illus. £8.50. Vol. II, 345–647 pp. illus. £9.00.

This series aims to give a concise, reasonably detailed account of excavated sites in the Holy Land. Volumes I and II together take us up to Jerusalem and there are another 2 volumes to come. The formidable list of contributors, mainly Israeli, but not exclusively so, is headed by the late Michael Avi-Yonah, who is editor of the series. The books are true to their title and only deal with sites excavated. This is, of course, sensible since the inclusion of long controversial arguments as to the identification of various sites would surely extend the series by at least another 2 volumes.

For the general reader of archaeology this is an excellent series giving a clear outline of the major features of each site. The text is broken up at regular intervals by fine illustrations and there are some superb colour photographs. The specialist, however, is not likely to learn anything he does not already know about the sites within his particular field and the bibliographies could, in places, be much fuller. For those sites normally outside one's sphere of interest then the series provides a useful reference.

It would appear that Avi-Yonah's editing has not been thorough enough and that more critical selection would have resulted in a more balanced work. For example, whereas Tell el-Farah (North) receives only 8 pages, Hazor spreads over 17 and they are equally important sites. Often the internal balance seems biased towards the later periods. En-Gedi, including Tel Goren, for example, is dealt with in 11 pages, of which only 2 are devoted to the extremely important Chalcolithic Sanctuary. The remainder gives us a far too detailed description of Tel-Goren, certainly not one of the most vital of sites. The articles, too, vary enormously in quality – only to be expected with so many contributors and less than adequate editing. Far and away the finest contributions so far have been by W. G. Dever on Gezer, and K. M. Kenyon on Jericho. These are both beautifully structured, well written pieces which successfully integrate the previous excavations into the later work producing coherent syntheses.

Though it came as no surprise after reading the opening remarks of Volume I, the habit many Israeli scholars have acquired of changing long established site names is tiresome. For example, Khirbet Kerak is to be found under Beth Yerah, and Ras el 'Ain under Aphek. Less forgivable is the listing of Tell Fara (south) under Sharuhén. Not only is the identification uncertain but it is hardly satisfactory considering one of the contributors to the series has recently suggested Sharuhén be located at Tell-el-Ajjul! (Kempinski, *IEJ* vol 24 pp. 145). At least a concordance of site names is to be included in the final volume, but it is a pity that it could not be accommodated at the start of Volume I.

In conclusion, then, this series should certainly appear on the shelves of even the most general library, and its value to the amateur is great. For the specialist, though it may be useful to consult at times, the variable quality, coupled with a high price prohibits purchase by the individual.

JONATHAN N. TUBB

COLLON, Dominique, *The Seal Impressions from Tell Atchana/Alalakh*. *Alte Orient Altes Testament*, Band 27. Neukirchen, Neukirchener Verlag, 1975. 217 pp., 65 pls. figs. DM. 130.

When Woolley published his book on Alalakh, the final report on his excavations at Tell Atchana, he included some photographs of seal impressions, which although very poor, made us aware that he had found the evidence for dating Syrian cylinder seals, which used to be called Syro-Hittite, in the first half of the second millennium BC instead of in the second half, as had been previously thought; we were not aware of the full extent of the evidence until the appearance of this publication, much delayed through no fault of the author.

Dominique Collon has performed a great service to Near Eastern archaeology in publishing so competently the cylinder seal impressions on the tablets from Tell Atchana, in the British Museum and in Aleppo. The impressions are clearly published in a catalogue with all the relevant information including the name of the seal owner, where known. Each entry has the drawing in the text, an arrangement of the utmost convenience. The comments and references are relegated to footnotes, which is also convenient, leaving the text of the description uncluttered. The historical back-ground in Part II is most competently done, and besides correcting old errors of numbering and attribution, she has sorted out as far as possible the chronology of the confusing Yamhad and Alalakh dynasties, and given a chronological table. The reproduction of reduced line drawings in the discussion on personalities, as well as in plates grouping all the impressions from particular levels is an excellent idea and most useful; so also is the abstraction of motifs from the drawings for grouping together in plates illustrating the discussion on iconography.

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There is an index of personal names of seal owners, concordances of museum, excavation and seal numbers, and most usefully, plans of the buildings of levels VII and IV showing where the tablets were found. Altogether the publication provides every possible item of information with one exception; there is no reference in the catalogue entries to the plate on which one may find the photograph, but this is through no fault of the author, nor is the inadequate reproduction of the photographs.

Dr Collon, an old student of the Institute, is to be congratulated on an excellent publication, her doctoral dissertation.

BARBARA PARKER

FINET, A, ed. *La voix de l'opposition en Mesopotamie; Colloque organisé par L'Institut des Hautes Etudes de Belgique 19 et 20 mars 1973*. Brussels, Institut des Hautes Etudes de Belgique. 214 pp. Price not known.

The papers of this colloquium include a number of valuable contributions on the question of checks on the authority of a ruler in ancient Mesopotamia. The subject was chosen as an extension of the theme *vox populi* discussed at the XII Rencontre Assyriologique at Paris in 1964 (the proceedings published in *Revue d'Assyriologie* 58 (1964) 145 ff.).

André Finet in an introductory paper sketches numerous sources of evidence for checks on royal autocracy. Edmond Sollberger considers some evidence in Sumer of the 3rd Millennium BC notably the reality of the sovereignty of the god Enlil who elects and deposes rulers; a case of a royal judgement overruled; the strange relationship of Urukagina to his predecessor in the ensiship and later colleague, and his wife. Claus Wilcke discusses evidence for the control of the king by the *puhrum* provided by letters of the reigns of Shulgi and Ibi-Sin. He also discusses the definition of the terms *ki-en-qi* Sumer and *eme-qi* Sumerian. In addition he seeks to distinguish in mythology evidence of Sumerian and Accadian hostility. While these literary compositions undoubtedly reflect the politics of the time and place at which they were composed or edited, his conclusions are perhaps over simplified. J.-R. Kupper has contributed an admirable paper based on the Mari archives, a source already mentioned by Finet, on the pressures surrounding a king on the upper Euphrates. Besides the intrigues and opposition from family and councillors, there is the influence of the temples, often acting through prophecy, the town assemblies of elders and other councils *suqaqim* and finally public opinion. Georges Dossin has assembled 3 letters from the Zimri-lim archive concerning the action of the king of Aleppo, his father-in-law, prohibiting the export of grain to Mari to relieve the famine, accounts of proceedings in the divine assembly, and revolts and opposition in the world of the gods. Jean Bottéro contributes a most useful and detailed study of the vicissitudes and troubles of kingship derived from *omen protasis*, mainly Old Babylonian in date. This is the seamy side of history not obtainable from official inscriptions and inadequately provided by preserved correspondence. Paul Garelli, in an important paper, considers the nature of the opposition in the Assyrian Empire. The conclusion is reached that internal revolts, howsoever due to smouldering discontent, do not normally come to the surface until led by a prince of the royal house. The Assyrian aristocracy was not one of land, but of official service, and the kings of the Empire had too much of a stranglehold on the economic livelihood of the officials, their servants, for any member to be able to afford to defy royal authority. The officers of state were paid by revenues from lands allocated to them, in some cases providing revenue for more than one official. Denunciation was rife and the royal policy of encouraging informers reporting directly to the king was a powerful weapon for the control of his servants. Only under the leadership of one of the king's sons contending for the throne could they afford to give expression to their discontents.

The assemblies of the third and second millennium BC have disappeared and the age of despotic monarchy has arrived.

BARBARA PARKER

MACQUEEN, J. G., *The Hittites and their contemporaries in Asia Minor*. Thames and Hudson (Ancient peoples and places) London, 1975. 200 pp, 68 plates, 63 figs, £7.50.

This is a much needed new book on the peoples of Asia Minor in the second millennium BC, not just another book on the Hittites. The author very properly stresses the fact that the Hittites, though undoubtedly the best known, were but one of the many peoples inhabiting Anatolia during the period in question. Up to now the others have not received their fair share in history or archaeology books, though it is becoming increasingly obvious that Hurrians, Kizzuwatnans, Arzawans, Kaska and Lukka to mention but a few had a significant role to play in the history and culture of the times not as inferior subjects of the Hittites, but as nations in their own right.

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The new outlook is reflected in the author's views on the political geography of Asia Minor based on archaeological realities rather than on the dubious identifications of place names of widely divergent periods. Moreover he seeks a rational and probably economic reason for Hittite policies based on the need to control the trade routes by which they obtained raw materials such as tin. Not less important is the firm stand taken against the spurious role assigned by many Aegean archaeologists to Mycenaeans in Anatolian affairs. In all these facets the book is unorthodox and refreshing when compared to earlier literature on the subject. If one has any complaints, it is that it is not longer and the author's views on Hittite religion would have been welcomed; and finally – not the author's fault – the price of the book is a deterrent to the widespread circulation it deserves.

J. MELLAART

MARKS, A. E. (ed.) *Prehistory and Paleoenvironments in the central Negev, Israel: Volume I, the Avdat/Aqev area, Part I*. Dallas, SMU Press, 1976. 383 pp. Illus. £20.00.

This volume, although it is in sum neither a preliminary nor a final report, contains elements of both. The introduction states 'This first of 2 volumes presents a major portion of the descriptive data on the prehistoric occupations and paleoenvironments of the Central Negev, Israel, gathered over numerous seasons by the Central Negev Project of Southern Methodist University'.

Given that the project has added a new dimension to Levant prehistory, to which we will have to adjust our ideas, the decision to publish rapidly was surely right. Clear presentation of the data and liberal use of illustration make this task easier, and Marks and the SMU team evidently intend to do justice to the prehistoric bonanza (rich sites, some in geological context and C.14-dated) which the now-arid Negev has so unexpectedly provided. Two kinds of papers are presented: (1) Extended preliminary reports on sites still under excavation; included are descriptions of Mousterian, Upper Paleolithic, Kebaran, Natufian and Aceramic Neolithic assemblages by A. Marks, F. Munday, H. Crew, R. Ferring, D. Henry and F. Servello. (2) Detailed reports by a competent team of earth scientists; the geographical setting is described by F. Munday, the local geology by P. Goldberg, the fauna by E. Tchernov, the pollen by A. Horowitz. These will be crucial for the interpretations to come (presumably in the next volume, where any necessary re-evaluations would also appear). Each paper is complete in itself with its own bibliography. A very useful glossary is included (but why at the back?); the team are surely wise not to adopt Levant Upper Paleolithic terminologies until the distinctive Negev groupings (composed of familiar types, excellently drawn by L. Addington) can be further studied.

Misprints seem few (reversed figure numbers on pp. 84 and 85) and this reviewer has only one complaint: possessors of the older map series (still in wide circulation) may, with an effort, find their bearings and see Ain Murra in Ein Mor, Abda in Avdat, Ain Umm Ke'eb in Ein Aqev, Jebel Kharuf in Har Harif etc.; but some names are changed, making difficult the pin-pointing of the site in relation to features or situations. Could not the older names be given at least once, in future volumes?

Meanwhile, may the best use continue to be made of the excellent facilities for archaeological research at Dallas, afforded by the University and by the Institute for the Study of Earth and Man, of which this volume is the second 'Reports of Investigations' to appear. *Ex Southern, lux!*

L. COPELAND

MELLAART, J. *The Neolithic of the Near East*. London, Thames & Hudson, 1975. 300 pp., 164 illus. £6.50.

James Mellaart has written a first class summary of the Neolithic of western Asia to which he has rightly joined in consideration the adjacent parts of Europe. It is a work of immense thoroughness and erudition. A comparison of this book and the latest edition of Gordon Childe's *New Light on the Most Ancient East* shows the enormous strides that the study of the Neolithic in this area has taken in the last 25 years.

One can now see incipient agriculture and animal domestication stretching back for thousands of years before the fifth millennium which was almost the earliest period considered possible at that time. When claims were made for a town at Jericho in the seventh millennium, grave reproof was invoked that there could be something as out of step with its 'area co-tradition'. Jericho is no longer in isolation. The gaps in the map are being rapidly filled in, and Mellaart enables one to see this in great detail.

Scientific methods have helped enormously in this. Not only is there carbon-14 to supply dates, knowledge of the morphology of domesticated grains and of skeletal changes in domesticated animals

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has very greatly increased, and the adjunct of flotation to excavation methods has made it possible to recover far more evidence. The anatomy of early agriculture and its relation to early settlement is now much better understood.

Mellaart divides the area into some 8 regions. In each he describes in detail the finds at all known sites. As he himself emphasises, much of the material is known only from interim reports of varying thoroughness and value. This makes the picture he is able to extract all the more remarkable. He emphasises that progress in different areas was at different rates and by different means and he does not try to press everything with the same mould. One could complain that there is not quite enough comparison, but the material is there, all beautifully assembled, to enable the reader to make his own comparisons. It might also be fair to say that he is inclined to accept the author's conclusions in some cases a bit too uncritically, regardless of the archaeological methods used.

In his chapter on conclusions, Mellaart may go further than some of his readers. Obviously man of the historic period was descended from Neolithic predecessors. Mellaart makes some far reaching suggestions. They are interesting even if one may doubt whether there is yet the evidence to support them.

The book is a must for students and most useful for colleagues. It is not light reading for the general public.

K. M. KENYON

VAN LOON, M. N. ed., *Korucutepe I* Part I. J. Boesneck and A. von den Driesch; Tierknochenfunde von Korucutepe bei Elazig in Ostanatolien pp.1–191 plus summary in English pp.194–220. Part II. W. van Zeist and J. A. H. Bakker-Heeres Prehistoric and early historic plant husbandry in the Altinovan plain, south-eastern Turkey. pp.224–257. North Holland/American Elsevier Publishing Company, Amsterdam, Oxford 1975. £17.50.

This is the first volume of a 3 part final report on the excavations of the Universities of Chicago, Los Angeles and Amsterdam at Korucutepe from 1968 to 1970, directed by M. van Loon, and deals with the environmental background of the site and its agricultural economy, which are described in ample detail by acknowledged specialists in their fields.

This information comes from a previously unknown area; moreover it provides a sequence from Late Chalcolithic to the Iron Age, unique elsewhere in Anatolia, where secure environmental data only come from the neolithic and early chalcolithic sites. This is a great step forward and shows what can be achieved by paying proper attention to plant and bone material. There are, however, not a few snags to overcome in evaluating this material. The discovery of a single recognisable bone (domestic pig) in the Late Chalcolithic levels is surprising and one feels unhappy about the disturbingly high percentage of animal bones (22.6%) from not less than 7 mixed strata. When one adds to such undesirable features the absence of material for the E.B.1 period (not apparently represented on the site) and the E.B.3 period which yielded no bones the sequence is evidently far from complete. The plant material is divided into Late Chalcolithic, third and second millennium and includes some from the neighbouring site of Tepecik. It may give a reasonably complete picture of the development, but one would have liked to see a breakdown into E.B.A. 1, 2 and 3 which is not presented.

In comparisons with other material from Anatolia one misses references to D. Perkins Jr and Patricia Daly's work on Catal and Suberde faunas and to Hans Helbaek's fundamental work in *Excavations at Hacilar*.

The schematic chronological outline, e.g. on p.240 for Tepecik leaves one in the dark as to correlations with Korucutepe and on pp.11–12 there is no mention of a missing E.B.1 or lack of E.B.3 material, nor any reference to M. van Loon's preliminary report in *JNES* 32, 1973, 357–444 where the Korucutepe sequence is set out in detail. Such omissions make this book, for all its fascinating information, difficult to consult. It seems a pity that no correlations were established with the third excavated site in the plain, Norşuntepe, which appears to have a more complete sequence, the publication of which is eagerly awaited. Only then may we learn more about the E.B.1 and 3 periods, and get a complete picture.

J. MELLAART

BENDER, Barbara. *Farming in Prehistory: from hunter-gatherer to food-producer*. John Baker, London, 1975. xi + 268 pp., 36 figs., 5 half-tone illus. £5.50.

The writer of a book on prehistoric farming, in addition to possessing the requisite literary skills, needs to combine to the greatest possible extent the roles of geneticist, farmer, anthropologist, botanist, archaeologist and zoologist. Dr Bender has essayed a synthetic review of our knowledge (in 1973) of the prehistoric food-production throughout the world. Since she is not involved in research

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in any of the scientific aspects of the topic, it is neither surprising nor unreasonable that the treatment is relatively elementary, seeming suitable for the intelligent layman or for undergraduates. There is little here for the researcher. Even at this level, the project is ambitious, and Dr Bender shows considerable courage in tackling it especially at a time when the subject is developing and changing rapidly.

Like Gaul, 'Farming in Prehistory' is essentially tripartite, having 2 parts, 1 of theory, the other of practice (reviews of archaeological evidence), linked by a pair of chapters on ecological aspects of the emergence of farming. The opening chapter discusses in general terms, the pro's and con's of predatory and reproductive economies, while the 2nd chapter reviews, in about 20 pages, the major hypotheses that seek to explain why human societies should take to producing their food supplies. The 3rd chapter is concerned with the contentious topic of the criteria by which domestication can be inferred. Wisely, Dr Bender restricts herself to offering summaries of the more important publications on the subject, without going into details or being drawn into critical comment. Chapters reviewing the evidence for climatic or ecological changes in the Near East, Mesoamerica and Peru and what is known of the natural distribution of the more important domesticates prepare the way for the examination of the archaeological records. The archaeology of early farming societies in the Near East, Meso-America and Peru, is covered in approximately 50, 30 and 20 pages respectively. The African and Asiatic foci are relegated to 10 pages in Appendix A, following the conclusions, while the possibility of an independent North American Eastern Woodlands agricultural tradition is afforded a single sentence on the opening page of the chapter on 'The distribution of potential domesticates.'

Dr Bender writes in a pleasant and clear style on topics both commonplace and arcane, eschewing the temptations to blind with science or to assert spurious authority and she pays due attention to contemporary fashions in archaeo-economic research without being slavish. Many academic publications are doctoral theses or lecture-notes transmuted. Dr Bender's book appears to be of the latter variety and it is sad to record that she fails to make the adjustments necessitated by the change of medium. The colloquialisms and grammatical laxities are sufficiently ubiquitous to make one wonder whether the book was dictated rather than written. Thus, describing the information from Çayönü as 'a bit piecemeal' (p. 149) would hardly raise a pedant's eyebrow in the lecture-hall, but looks odd in print, and while the intended meaning of the title to a section of the 'theory' chapter, 'BRAIDWOOD'S CULTURAL LEVELS', is immediately obvious, its precise meaning is very different and carries insulting overtones. Similarly, another title in this chapter, 'CARL SAUER'S SOUTH-EAST ASIAN HEARTH' is not disagreeably reminiscent of a hospitable but none too respectable nightclub. If the limitations of our evidence are literally 'imponderables', as Dr Bender suggests, (p. 210), then what is the point of writing an entire book on early agriculture? Many would agree with Bender that chili peppers are 'non-edible plants', but what she really means is 'non-nutritive'.

The book is sparsely illustrated, and many of the illustrations are unsatisfactory. Over-inking or indifferent block-making has caused smudging of the shading in several of the maps, and has reduced Bray's photograph of Chuquitanta (p. 207) almost to the level of the dreaded Asiatic Grey-on-Grey technique. Fig. 7 (p. 68) maps the modern vegetational and climatic zones of the Near East, and sites of the sixth and seventh millennia BC which have yielded evidence of plant or animal domestication. The sites are numbered, but the reader is referred to Fig. 19 (65 pages away, of a different area, at a different scale, and for a different period) for a key. The bibliography is good, but Dr Bender occasionally indulges in the use of secondary sources: for instance (Renfrew [J] 1969) is given as a source for the archaeobotany of Çatal Hüyük and Jericho; (Renfrew [C] 1972) for the fauna from Argissa, Nea Nikomedeia and Knossos; and (Murray 1971) for the morphological changes that may (or may not) accompany domestication in pigs. (Hugot 1968) (p. 218) is not in the bibliography. Bender's reviews of the archaeological records of early farming are accompanied by excellent and very helpful tables correlating C¹⁴ dates, sites and the presence of domesticated plants and animals.

Much of our present knowledge of plant and animal domestication derives from scientific research. While the fact that Dr Bender is not a trained scientist does not disqualify her from writing about the fruits of such studies, some drawbacks are immediately apparent on turning to the entry in the index for 'Lens', where one is confronted with separate entries for the synonyms *L. culinaris* and *L. esculenta* (*L. culinare* Medicus 1787 has priority). Both synonyms also appear on page 156. Furthermore, in her text Bender uses *Zea mexicana* as the binomial for teosinte, but in the chart showing the sequence in which plants were domesticated in Tehuacan, Tamaulipas and Ayacucho, she lists it by its superseded name of *Euchlaena mexicana*. Maguay (*Agave* spp., not ssp. as in the text) and prickly pear (*Opuntia*) are not trees as Dr Bender says (p. 172) but are succulents.

It is unlikely that cultivated *Pennisetum* can be reliably identified by its pollen alone (p. 218). The plants identified at Ch'ien-shan-yang are listed with the comment 'Many of these are presumed to be local cultigens.' However, the list includes the peanut, *Arachis hypogea*, which is believed to be native to the New World and whose presence implies corrupt stratigraphy, unreliable identification, or early contacts between China and South America.

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Unfortunately, it is not only the scientific parts of the text which need critical attention. Is J. R. Harlan best known as an archaeologist (p. 127)? Chateaufort-les-Martigues is quoted as yielding evidence for caprine domestication in the seventh millennium bc, but the site has not yielded absolute dates. The reader should bear in mind Gramari, another Sauveterrian site with 'domesticated' *Ovis aries*, where the C¹⁴ dates quoted in the excavation report (*Gallia Préhistoire* 14, 1971) suggesting an age of more than 10,000 bp are much more coherent and convincing than the complete series of C¹⁴ determinations to be found in *Radio-carbon* 12.

It is disappointing that Dr Bender does not explain clearly the 2 major theories on the evolution of *Zea mays* as argued by Paul Manglesdorf and George Beadle. However, this lapse is forgivable because, when Bender's book was prepared in 1973, Dr Beadle had not published a definitive scholarly statement of his arguments, although he had delivered them in lectures.

Readers should be advised that since the publication of Bender's book, evidence has come to light which strongly suggests that agriculture was practised in Ecuador during Valdivia times (see p. 229). The carbonised remains of a maize kernel have been found imbedded in a Valdivia sherd from the site of San Pablo and pots from Valdivia phases 5 and 6 frequently bear an appliqué decoration which is almost certainly a representation of a maize cob (Lathrap, *Ancient Ecuador*, 1975, p. 20).

For the neophyte and layman, Dr Bender has done a signal service in producing a useful and very readable review of prehistoric farming, which seems likely to stimulate interest in the topics it covers. It is a pleasure to record the opinion that she has in general acquitted herself creditably in this monstrous task. However, given that her book seems most suited to the tender and innocent, the sort of blemishes and inaccuracies that have been noted (the list is by no means exhaustive) are particularly unfortunate, and detract seriously from the value of the book.

At £5.50 at publication in 1975, *Farming in Prehistory* was a minor example of some of the auto-destructive tendencies in publishing. Comparison with Mellaart's *The Neolithic of the Near East* (164 illus., 300 pp., £6.50, hard-backed) is perhaps unfair, but comparison with Todd's *The Northern Barbarians* (33 illus., 7 half-tone, 232 pp., £5.50, hard-bound) is not. John Baker have published Barbara Bender's book on heavy paper, using attractive typography, and although paper-backed, the binding is sewn. With another year or so of rampant inflation, *Farming in Prehistory* may soon appear an attractive bargain — providing the publishers do not increase its price.

R. N. L. B. HUBBARD
MONICA BARNES

CAMPS-FABRER, Henriette. *Un Gisement Capsien de Facies Setifien. Medjez II, el Eulma (Algerie)*. Editions du Centre National de la Recherche Scientifique. Paris 1975. 448 pp., 163 figs., 170 fr.

This is the excavation report of the shell midden at Medjez II in the Department of Setif. The site consists of an Upper Capsian midden which is unusual in having a depth of over 3 metres, an occupation, according to the Carbon dates, covering a period of over 2,000 years. This long sequence makes it possible to observe considerable development in the material. This site is also rich in stone and bone tools and there are a number of burials of both adults and children.

Of the 2 parts, excavation and analysis, the weight falls on the latter with the former rather neglected, which in view of the importance of the site is a pity. The appraisal of the material is based on a number of sondages, some by Verguet in 1963, 1965 and 1966, and those of the author in 1966–67 and more extensive trenching in 1967–68.

There are several shortcomings in the part of the report covering the excavation. The author has perpetuated the bad habit of reproducing a small area of the local 1/50000 map instead of drawing a special one for the report. The 3 excavation photographs are not very informative, there is no section of any of the excavated area, and a number of the photographs have no scale. In view of the size and splendour of the monograph these shortcomings are very undesirable.

The analysis of the material covers that of Verguet as well as those of Camps-Fabrer. Verguet's material is not very useful since there is no data regarding any of his excavations, and it would have been better if it had been disregarded.

The material of Camps-Fabrer which occupies the main part of the report is based on 2 areas, 3 squares, S1–S3 and 6 squares A1–A6. Here again the lack of sections make the interpretation very confusing. The 2 areas are separated from each other by the distance of 2 unexcavated squares and as the spits in which both areas were dug do not correspond it is impossible to judge the exact relationship between the various archaeological horizons.

The archaeological material is broken down in great detail, and is divided into 4 phases based on typological grounds. This breakdown follows the now generally accepted procedures, but of interest is the author's cumulative graphs of the bone tools, which are very useful. Included are reports on the human remains, and the fauna and flora.

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The author concludes that this material represents a regional group, which though covering the general time span of the Upper Capsian, is sufficiently different to warrant a separate name Setifien, though this implies only a local variant of the Capsian and not a separate complex. Whether similar detailed studies will show the validity of this distinction remains to be seen. A number of carbon dates were obtained within the general range of 6910 to 4550 bc.

This is an interesting study of a great deal of material, but it is a pity that the excavation method do not inspire much confidence. So much meticulous excavation has come out of France since the war that one would have hoped that it would have become more widespread and one feels that the separation of the material on statistical grounds should have been the confirmation of the stratigraphical results rather than the other way around.

J. d'A. WAECHTER

REYNOLDS, Joyce, (ed). *Libyan Studies. Select Papers of the late R. G. Goodchild*. London, Elek, 1976. 345 pp. 96 pl. 75 figs. £12.50.

This memorial volume honours Richard Goodchild who died in 1968, at the age of 49. At his death he was Professor of the Archaeology of the Roman Provinces at the Institute of Archaeology but most of his working life had been spent in Libya, where he enjoyed a distinguished reputation primarily as an archaeologist but also as a wise and far-sighted administrator. Goodchild had time to complete only one major work (*Kyrene und Apollonia*, Zurich, 1971, not yet available in translation) based on his vast knowledge of the classical archaeology of Libya. The contents of this book, 20 selected papers together with much of an unfinished book on Cyrene, contain the seeds of others which would surely have resulted had he lived longer.

Three of the papers are seen for the first time. Two relate to the organisation of defensive systems in Tripolitania and Cyrenaica in the later Roman Empire, one of Goodchild's particular interests. An essay on Synesius of Cyrene provides a vehicle for reflections on military policy in the early 5th century, whilst in Tripolitania the first epigraphic evidence for road improvements in the middle years of the 3rd century is discussed. Another text (presented with a revised reading by the editor) suggests that by the late 4th to early 5th centuries the 'gentiles' or natives settled by Imperial policy in the frontier zone to prevent barbarian incursions had in fact swung their allegiance towards the marauding desert tribes whom they were supposed to control. (This point is made by the editor, although its significance to 'limes' studies would not have been missed by Goodchild, who never completed the article.) The previously unpublished paper presents numismatic evidence for the breakdown of organised municipal life in Lepcis Magna soon after the Austrian devastations. The only archaeological evidence for the Vandal occupation of Lepcis, a coin hoard deposited in the reign of Anastasius, is also discussed.

The most substantial new work, however, is 'A Hole in the Heavens', 9 chapters of a book which Goodchild was preparing on the history of the rediscovery of Cyrene. It is written with the narrative skill which made his drier productions readable as well as scholarly, and the historical account is leavened with glimpses of the wit and humanity which made Goodchild a revered figure in Libya. The manuscript breaks off at the time of Libyan independence in 1951, having surveyed 250 years of exploration and excavation since the first European sought out the site. Cyrene enjoyed its spectacular moments amongst the routine of continuing investigation, not least the frenzied scramble by Italian soldiers for the missing head of the 'Venus of Cyrene'. The head was never found but the search began the long and fruitful Italian governmental excavations at Cyrene.

The other papers are, for the most part, well known and on the whole remain remarkably unaffected by later discoveries. Detailed notes on these, together with a biographical note and a Goodchild bibliography have been prepared by the editor, Joyce Reynolds, who in all respects has presented a worthy tribute to her former colleague. She rightly draws attention to the terms of frontier defence and life in the frontier zone which runs through much of Goodchild's work. His study of the 'limes Tripolitanus', initiated during his most productive period of fieldwork between 1946 and 1954, is particularly important.

This book confirms that Goodchild's greatest single contribution to Libyan archaeology was the energy and skill which he devoted, with the help of many colleagues, to wide-ranging surveys in Tripolitania and Cyrenaica. By getting away from the major coastal cities and examining in detail the monuments of the interior, a balanced map of Roman Libya was drawn for the first time. It is a pity that so few scholars have been inclined, or allowed, to follow his example. Recent research has been limited in scope and has altered few of his conclusions, although tight dating through controlled excavation is very badly needed for many inland sites, especially in Cyrenaica where epigraphic evidence is generally lacking. Political considerations permitting, it is to be hoped that an opportunity to continue and extend his pioneering work will be offered and accepted before the accelerating pressures of modern development in Libya have made it too late.

J. A. LLOYD

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SNOW, Dean. *The American Indians, their Archaeology and Prehistory*. Photographs by Werner Forman. London, Thames and Hudson. 1976. 272 pp. XXIII color plates. 175 monochrome plates. £6.50.

At long last, the art of native North America is receiving the recognition it deserves in this country. The Arts Council has produced a superb display of North American Indian art with its 'Sacred Circles' exhibition at the Hayward Gallery. The Inveraty Collection, a valuable group of Northwest Coast pieces, has recently been purchased by the Museum of Mankind and is now on display. These exhibits are bound to stimulate a greater interest in the North American Indian on the part of the British public. It is a pleasure to be able to recommend Dean Snow's book to the general reader who wishes to know a little more about the cultures which produced such interesting 'minor' arts.

Although Professor Snow's book is subtitled 'Their Archaeology and Prehistory', it concentrates on art and artifacts. The site photographs emphasise the dramatic beauty of many parts of what is now the United States and Canada but do not illustrate excavation techniques. There is a shortage of charts setting out chronologies or cultural relationships, although Snow has appended a very useful list of approximate dates for important cultural events. Forman's photographs of prehistoric and historical artifacts illustrate the beauty of many of these objects.

Snow avoids entanglement with complex anthropological theory, wisely realising that it often bores or confuses the sort of casual reader to whom this book is directed. He devotes a chapter to each of 5 important 'culture areas', using a system of organisation which is well established in North American archaeology. The text is informative, yet the book would be worth buying for the illustrations alone.

MONICA BARNES

WHEELER, Mortimer. *My Archaeological Mission to India and Pakistan*. London, Thames and Hudson, 1976. 96 pp., 56 plates, figures and maps. £4.50.

This slim volume appeared just before the author's death in July 1976 and consists of, in his own words, 'a succinct and essentially personal review' of the processes which took him in 1944 from the command of a brigade in the 8th Army above Algiers to New Delhi, to revitalise the then moribund Archaeological Survey of India. Some of the story has been told before, but much has been known only from hearsay evidence from colleagues and contemporaries in India and this country, so it is useful to have Wheeler's own version on record.

One chapter records the establishment of the 'Taxila School of Archaeology' in 1944 to provide basic training in archaeological methods for 60 or so recent graduates of Indian Universities. These were the men who for the next generation were to form the core of the teachers, researchers, and administrators for the Universities and Archaeological Services of both India and Pakistan, and several casually posed photographs capture this formative episode in their careers.

Wheeler's last excavation, at Charsada near Peshawar, in 1958 is integrated with a general account of the Greek incursion into India in 327 BC and Alexander's personal encounter with the Indian philosophers at Taxila. Perhaps the author saw in this a parallel with his own arrival in the sub-continent; a not inappropriate analogy. For his influence there has been deep and longlasting and the introduction of the 'Wheeler system' marks a horizon style in Indian archaeology as clearly as do Hellenistic town planning and artistic canons in the archaeological record.

Subsequent chapters recount the discovery of an Indo-Roman trading station at Arikamedu on the south-east coast, its implications for dating contemporary inland sites, and for our understanding of Roman commerce. The chaotic field of Indian megaliths is next put into a comprehensible framework of chronology and culture sequence, and the last 2 chapters recount the excavations at the Indus Valley sites of Harappa in 1946 and Mohenjodaro in 1950, where some stratigraphic order was imposed on the great cities excavated a generation earlier by his predecessors Sir John Marshall and Sri M. S. Vats.

In sum, this little book, while doing little to alter the author's solidly established professional reputation, will contribute not a little to his personality cult and usefully documents some of the most important stages of his distinguished public career.

I. C. GLOVER

BORD, Janet. *Mazes and Labyrinths of the World*. London, Latimer New Dimensions Ltd., 1976. 181 pp. 269 figs. £7.50.

The co-author of *Mysterious Britain* has here presented us with a much less contentious and thus more freely entertaining work, consisting of a short introduction and a large compendium of

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illustrations, extensively annotated. The image of the maze seems to answer some deep-seated need of the human consciousness, and the aim here is to provide as many and varied examples of the maze in actual construction or in symbolism and imagery as the author could find. These range from prehistoric rock-carvings of spirals to the design in coloured tile used on the Victoria Line underground station at Warren Street. For prehistoric times the illustrations are of spirals; one may regard Mrs Bord's interpretations of mystical life forces and their symbolism however one wishes, but the mazes that we chiefly think of today are apparently derived from medieval re-castings of the Minotaur legend. The book provides many delightful examples in art and literature. The turf and stone mazes laid out especially in England and Scandinavia are medieval in origin, and were apparently intended as symbolic of a mystical or spiritual goal or more commonly as part of semi-pagan country festivals connected with the spring. The book intends, rightly, to be more than instructive entertainment.

ISOBEL THOMPSON

COLLINS, Desmond. *The Human Revolution: from Ape to Artist*. Oxford, Phaidon, 1976. 208 pp., illus. £3.50 paperback; £6.00 hardback.

In this book, Desmond Collins 'charts the course of 2 revolutions and describes the events leading up to a 3rd'. First, he describes the revolution in thought leading to the general acceptance of man's animal ancestry; and then man's physical and cultural evolution to full humanity – the original Human Revolution – until the end of the Palaeolithic, when the next revolution was able to get under way.

The first 2 chapters give an adequate brief background to the Pleistocene and to the early thinkers and researchers in this field. The next 3 chapters deal with problems pertaining to the classification of early hominid forms. While there is probably not a better informed or more stimulating popular introduction to this subject available to the intending student or intelligent layman, some of Collins's statements seem controversial. For instance, he argues well that neotony was probably the mechanism for the Neanderthal to neo-sapiens changeover, but is it correct to conclude that neotony is a reason '... why, child-like, we have invented an accelerating economy and a consuming love of the arts and other forms of play' (p. 129), or 'The 1st men were often monogamous unlike the apes' (p. 97); we just do not know this.

On Palaeolithic art, Collins is influenced by the art historian, Siegfried Giedion (while he ignores Ucko and Rosenfeld's rationalist standard work), and this is unfortunate because some of Giedion's views are quite misleading. For instance, human or human-like figures in Palaeolithic cave art are not particularly rare (nearly all of the decorated caves mentioned in the text contain these figures); nor is it by any means correct to say that there was 'not even a systematic commitment to the horizontal axis' (p. 140).

The illustrations are lively; indeed, the busy non-specialist could learn a lot quickly by merely studying the pictures and their captions. But there is no separate bibliography, no glossary, and no detailed time charts or hominid adaptive radiation schemes, which would be helpful to the newcomer to the subject.

Otherwise, this is a very worthwhile book of 'popular' science, but the paperback at £3.50 might not reach the wide audience it is probably aimed at.

A. G. HOOPER

GREEN, Miranda, *The Religions of Civilian Roman Britain or A Corpus of Religious Material from the Civilian Areas of Roman Britain*, B.A.R. Publication no. 24, 1976. 321 pp., 21 map figs. £5.90.

Miranda Green's book does much to fill a neglected gap in the field of Celtic and Romano-British studies. She has divided her work fairly equally between a discussion of the evidence for various religions and their respective places in Romano-British civil society and a corpus of pertinent artifactual material, which is illustrated with some 220 photographs of varying quality and a score of distribution maps.

Her conclusions suggest that Britain remained spiritually Celtic throughout the 4 centuries of Roman rule. Nevertheless, it is interesting to consider that the British aristocracy, to whom much of the classical (as opposed to Celtic) artifactual material may have belonged, may outwardly have feigned interest in the state religion in order to have been easily accepted by the central administration. A predominance of 'Roman' religious objects in well-to-do villas and town-houses could perhaps corroborate this. The study attempts to cover a vast field and the work on the distribution is warmly welcomed, although the number of maps could have been reduced by combining certain groups of objects denoted by individual signs.

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It is a pity that some mistakes occur. The major Roman towns on figures 1 and 2 are not consistent. Plate XXVd indicates a *biga* rather than a *quadriga*, and plate XXVIII d would seem to be illustrating a seal-box lid with a stylized ?phallus motif, rather than a model lamp. Additionally, there are a number of omissions from the corpus, but there are some 500 site entries.

All in all the value of this publication is to provide a wealth of material in an easily accessible form as well as a useful synthesis and discussion, and hopefully it will act as a basis for future researchers in this field.

PAUL ARTHUR

VERNANT, J. P. *ed. Divination et Rationalité*, Editions du Seuil, Paris, 1974. 311 pp. Price not known.

Of those societies in which divination has occupied a central place, this excellent collection of papers treats only a selection: the classical civilisations of China, Mesopotamia, Greece and Rome, and, somewhat incongruous in such company, the Nzakara of Central Africa. This limitation in range, however, is compensated for by the theoretical penetration of the individual papers.

Vernant, in a valuable introduction, outlines the collection's two main aims. The first is to study the intellectual attitudes underlying divination, and the system of logic by which it operates. The 2nd is to delineate the socio-political role of divination and the relationship between diviners, with their recondite knowledge, and those exercising other kinds of power or authority. Regrettably, this sociological aspect, promisingly raised by Vernant, is prominent only in 1 paper: Grodzynski's analysis of the political motivations underlying the repression of divination in 4th century Rome. Other papers treat aspects of the first theme.

Crahay, discussing the Delphic oracle, well illustrates the circular and holistic nature of divinatory belief: the oracle's failures and contradictions are accounted for by a series of secondary explanations centring on the human fallibility of its consultants. Brisson and Carlier examine the status of divination in the writings of Plato and the neo-Platonic philosophers, respectively. Vandermeersch and Gernet discuss the relation of divination to other Chinese intellectual achievements, notably writing and mathematics.

The importance of the Mesopotamian divinatory material is done full justice in a masterly and innovative contribution by Bottéro. After full analysis of the sources, the techniques and the religious concepts involved, he proceeds to examine models of analysis in deductive divination, postulating a development from an original empiricism to an *a priori* 'scientific' method.

Bottéro is attentive to the problem of why, among the infinite variety of material forms, certain phenomena were thought especially prone to yield omens, yet in places one would have been grateful for further insights from him into this question. For instance, is the explanation for the relative lack of divinatory interest in the vegetable and mineral orders simply that for them 'la variabilité est moindre par nature' (p.101)? Viewed objectively, plant and mineral anatomy is quite as varied as liver anatomy. The preference for certain phenomena surely arises not only from their objective nature but also from their relationship, actual and conceptual, to the Mesopotamian human and divine worlds. Fuller investigation into the type of physical or behavioural characteristic required to render an object ominous might thus yield valuable insights into Mesopotamian thought categories and the manner in which they classified their external world.

Bottéro has provided a fully documented, comprehensive survey of the data. Moreover, by avoiding the temptation to characterise Mesopotamian divination as arbitrary and illogical and insisting throughout on the internal coherence of its conceptual framework, he has made an important and challenging contribution to the understanding of its rationale.

T. H. J. FIRBANK

BROWNE, D. *Principles and Practice in Modern Archaeology*. London, Hodder and Stoughton, 1975. 272 pp., 11 pls., 26 figs. £1.50.

It is not clear why yet another book on the practice of archaeology was thought desirable so soon after the publication of John Coles' brilliant *Field Archaeology in Britain*. Many archaeologists who still have not read David Clarke's *Analytical Archaeology* will no doubt be indebted to Mr Browne for his excellent summary (chapter 1). However, the relationship between this chapter and the rest of the book is not entirely clear.

The main text is an excellent and clear account of current practice in British archaeology, even if odd statements indicate personal prejudice rather than strict facts, e.g. 'The present Inspectorate system is not adequate. . .' (p. 81). In reading the discussion on section drawing, one wonders whether Mr Browne has actually drawn a section! In one fell swoop he writes off the sections of virtually all

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contemporary Prehistorians and Mediaevalists as masking indecision (p. 69). The section he published (fig. 1) would surely be rejected by any reputable journal. Indeed, all the illustrations look like rather rushed afterthoughts. With the mass of excellent archaeological drawing appearing in our national journals, surely something better could have been achieved than simply using well known illustrations from *Archaeology from the Earth* and *Practical Archaeology*. Even many of these are spoilt with new lettering. The photographs look even more like an afterthought. Although they are all excellent, Chalton does not really give a balanced picture of archaeological practice, particularly as almost half the photographs are of rectangular Anglo-Saxon posthole structures.

The second half of the book is perhaps of more value to beginners than the first. In it, the author summarises much useful literature on conservation and the analysis of organic and inorganic remains.

It is, however, regrettable in a book in the *Teach Yourself* series, presumably aimed specifically at the amateur, that the author should have taken such a strong anti-amateur line: '... and increasingly undesirable that modern archaeology should be initiated by anyone but the fully trained professional.' (p. 225). What possible objection can there be to a fully trained amateur? If I were an amateur, and I cannot imagine many professionals buying this book, I would read Mr Browne's comments and then Dr Coles' reasoned comments on amateurs (p. 5 in *Field Archaeology in Britain*), place *Modern Archaeology* back on the shelf, and buy *Field Archaeology in Britain*.

PETER DREWETT

CRUSE, J. and NEWMAN, A. A. (eds). *Photographic Techniques in Scientific Research*. London, Academic Press, 1973, 1976. Vol I, 349 pp. illus. £7.60. Vol II, 447 pp. illus. £16.00.

The declared aim of these volumes is to offer an authoritative account of photographic techniques in particular areas of research. The areas dealt with are the photography of living marine animals, soil mapping from the air, insects, the design office and palaeontology, in Volume I, and pharmacological research, diffraction patterns, infra-red, paediatrics, material sciences, and archaeology in the second volume. A mixed bag obviously, and the contributions are of a very mixed quality. Some are no more than cursory introductions to the subjects, while others are carefully-planned surveys of research developments and applications. Several contributors think it necessary to give elementary instructions in photography and microscopy – probably unnecessary in the first place, since nobody is likely to read the books in order to find out how a camera or a microscope works, and certainly unjustified in duplication. When books cost as much as these do it does not seem unreasonable to expect tighter editing.

Many of the chapters are of little direct interest to archaeologists, but nearly all are instructive to read, and many suggest techniques which might well be useful at some time, especially in the study of artefacts. The contributions on insects, palaeontology, pharmacology and material sciences all contain such nuggets, while those on soil-mapping and on the design office are of even more immediate interest.

Unfortunately the contribution on archaeological photography is one of the more cursory, and amounts to little more than an elementary account of the subject, illustrated with some quite unorganised-looking site photographs.

P. G. DORRELL

FLEMING, S. *Dating in Archaeology*. London, Dent, 1976, 272 pp. £8.95.

This comprehensive and up-to-date survey of dating techniques is written by a physicist in Dr Aitken's department at the Research Laboratory for Archaeology and the History of Art. Dr Aitken's own book *Physics and Archaeology* has been recently issued in a second edition, and the recent work constitutes a valuable supplement relating to dating techniques. Dr Stuart Fleming is already well-known for his book *Authenticity in Art* and for his proofs by thermoluminescence (a topic discussed authoritatively in Chapter 5) that certain Chinese 'antiques' were made in the 20th century.

The time-ranges to which the principal scientific technique can be applied are shown in a chart (fig. 1.4, p. 29) and the topics are then discussed in turn. The emphasis is generally on the physical methods with examples selected from varied epochs of archaeological and art-history.

Dendrochronology and Radiocarbon Dating are discussed in the next 2 chapters. The relation of tree-rings to weather is discussed (pp. 40 ff.) in a section 'English Weather Patterns over Historical Times'; however, the reviewer's article cited is now superseded by his paper in *Medieval Archaeology*, 18, 1974, 165–172 which gives dates 56 years earlier for the Southampton site and which suggests for Dr Fletcher's North Elmham chronology (cited p. 51) the dates 697–910 (cf. also *Masca Newsletter*, 11, May 1975, p. 9). The calibration of the C¹⁴ curve by tree-rings is explained in Chapter 2, the

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physics of radiocarbon measurements being fully explained in Chapter 3. The discrepancy between varve and C^{14} dates is mentioned on p. 73 and again in Appendix A where it is emphasised that 9530 algae-varve years in the Lake of the Clouds match a radiocarbon age of only 8800 b.p., the C^{14} dates thus being about 730 years too young. An interesting map (based on Van der Merwe and Stuiver's 1968 results) dating the spread of Iron Age industry in Africa from c. 1000 bc to ad 1110 is reproduced on p. 81.

Other topics include Archaeomagnetism and for the last two thousand years the secular magnetic changes for England (after Aitken's, 1970) and Japan (after Hirooka, 1971) are shown in charts.

The dating of paintings and of coins by metallic analyses (Chapter 10) is of special interest. An 'Additional Bibliography' of current articles in each field, with references from 1974 and 1975, constitutes an unusual but useful conclusion to the book.

D. J. SCHOVE

HODDER, Ian and ORTON, Clive. *Spatial Analysis in Archaeology*. Cambridge University Press, 1976. (New Studies in Archaeology series). 270 pp., 153 figs. £7.95.

Spatial analysis in archaeology, a stimulating ingress to this field, is the first of a series that was to appear under the general editorship of D. L. Clarke. Together with the promised *New directions in archaeology*, this series will take its place as a memorial to an original thinker and inspiring teacher (amongst whose pupils was Ian Hodder), whose untimely death deprived him of even seeing these works enter circulation.

In 8 chapters, Hodder and Orton 'attempt to apply more rigorous quantitative techniques to the analysis of archaeological distributions'. That the 2 writers are well suited to this task is apparent throughout the book. After an introductory chapter and a second on archaeological distribution maps, 5 chapters consider the distribution of objects and of settlements and the relationships between these and other landscape features, and the concluding chapter briefly airs some problems and potentialities of spatial studies. P. J. Diggle has contributed an appendix on nearest neighbour analysis. If the book appears to be somewhat lacking in form or direction, the wealth of illustrative material (about two-thirds of the specimen studies are of distributions in England and Wales, and about one third of examples on the European continent), some drawing on published data, but much based on original research, makes *Spatial analysis* both refreshing and tantalising to read. The rejection of some of the more controversial trends in current archaeology (including 'site catchment analysis' and the use of random sampling techniques – for the former, see pp. 230–6) is a welcome feature.

The general message conveyed is that archaeological data are considerably more complex than is usually admitted. Identifying a phenomenon may merely reduce the choice of possible explanations, rather than isolate a single option (cf. pp. 31, 81, 84, 145 etc). This leads to a laudable plea for a more rigorous attitude towards the collection and analysis of evidence: '... the slow collection of large bodies of reliable data' (p. 245) is clearly not a demand unique to the future understanding of spatial processes. How difficult the achievement of rigour can sometimes be, is illustrated by a number of the examples presented. Thus, the computed gradient for interaction fall-off from a supposed Neolithic pottery producing centre in Cornwall (pp. 110–3) is a classic case of the problem described on page 104 (determining a trend through a scatter of points in which large gaps occur); the apparently significant concentration of Iron Age coins around the oppidum at Selsey (Fig. 5.46) loses its impact when it is pointed out (as the text does not) that the only evidence for the latter lies in the former; and by mapping roads but not rivers on Fig. 5.73, one explanation for the distribution of pottery from a Roman kiln centre is made to appear unjustifiably preferable to a second; and so on. In the authors' words (p. 104), 'It is dangerous to generalise beyond the limits of one's data'.

In the nature of their task, Hodder and Orton are testing analytical techniques on archaeological information, not searching for methods appropriate to studying specific societies or cultural features. However, the desirability (or even possibility) of this approach could perhaps be questioned. The undefined concept of 'competition' occurs commonly in the book as an explanation for various patterns (eg. pp. 46, 47, 55). A specific case of the same thinking is the comparison of the Roman pottery centre in Oxfordshire with a number of other 'centres', including the sources of Neolithic stone axes and of Iron Age coins, as a 'much more efficient industry' (p. 113). The interesting and perhaps controversial questions regarding the relevance of certain geographical models to pre-industrial societies are virtually avoided altogether.

This writer would argue that more questions should be posed before the analyses take place, and that the former should be determined by a conceptual framework that derives from the specific subject of attention. While due emphasis is placed on the fragmentary nature of archaeological data, Hodder and Orton nonetheless underplay the disparity between what can be found out about ancient and contemporary societies. The difference between the locational patterns of telephone calls and

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stone axes on the one hand, or between tomato farms or ghettos and hillforts or pottery kilns on the other, is more than one of material survival and recovery. A crucial aspect is that of time. The majority of industrial locational models deal with instantaneous or quasi-contemporary situations; change through time is studied by piling up successive contemporary patterns, like pages in a book. A model that deals with an archaeological population, on the other hand, needs to be inherently dynamic. The present distribution of Bronze Age palstaves in England, for example, exists independently of its originators. Both production and movement have ceased (not necessarily a contemporary event or series of events), and all of the many surviving objects need not have been in use or circulation at the same time. True synchronism is achievable in modern geography (or is at least a realistic aim), but is rarely so for the archaeologist. Hodder's concentration on Roman material in his own fieldwork, where the potential for the closest chronology in pre-feudal Europe seems to lie (cf Figs 5.58-65), is perhaps an implicit recognition of this point. *Spatial analysis* presents many challenges to the archaeologist.

M. W. PITTS

SWANSON, Earl, ed. *Lithic Technology. Making and Using Stone Tools*. Papers from a Congress, Chicago, August, 1973. Mouton, The Hague, 1975 (U.S. distributor, Aldine, Chicago). 252 pp. illus, and plates, \$27.50.

The IXth International Congress of Anthropological and Ethnographical Sciences was held in Chicago, Illinois in August 1973. Papers for the Congress were submitted and circulated among the participants before the meetings in an attempt to overcome the usual difficulties of oral presentation, thereby leaving the time allotted for individual sessions for discussion and questions. This volume is the result of the session held on lithic technology.

It was stated that the basic aim of this book was to attempt to update this sector of scientific knowledge with contributions from scientists from all parts of the world. It is therefore somewhat disappointing to note that the majority of the papers only reflect the influence of investigation and experimentation in lithic technology in the New World. However, accounts of research in France, England and Japan do help to broaden this outlook.

The 13 papers of this volume are presented under 3 basic headings: 'Lithic Technology and Taxonomy', 'Experimental Analysis of Toolmaking', and 'Application of Analysis to Archaeology'. The discussion, which summarises the commentary from the session, forms the 4th and final part. Space does not permit a discussion of all papers, but a brief comment on some points of particular interest will hopefully give some insight into the various aspects covered.

In a paper entitled 'Idiosyncratic Behaviour in Chipping Style' Joel Gunn seeks to illustrate how problems of social organisation and function can possibly be approached through the use of laser diffraction apparatus and multivariate statistical analyses. He thereby demonstrates how 1 prehistoric and 5 modern flint knappers can be individually identified through their work.

The benefits of a multivariate statistical approach are also shown by L. Lewis Johnson. The title of her paper 'Graph Theoretic Analysis of Lithic Tools from Northern Chile' is rather misleading in that she discusses only a sample of the cores from her excavations. However, the criticism of one discussant as to her 'quite obvious' results can perhaps be overlooked in light of her excellent presentation of methods of categorisation and computer analysis which clearly illustrate their viability for further more complex analyses. Also obscured by its title is the valuable terminology for the description of experimental manufacturing suggested by Mark Newcomer in his paper on the 'punch technique'.

It is appropriate that Don Crabtree heads the second section of this book on experimental toolmaking. Of particular interest is the list of questions he feels can be answered by the evaluation of lithic debris and broken and malformed artifacts. His discussion of thermally altered flint is over-shadowed however by the experimental work presented by Barbara Purdy in 'Fractures for the Archaeologist'.

The third section of this volume, dealing with the application of analysis to archaeology, is highlighted by the efforts of Anthony Ranere. Here technological and functional experimentation are combined with archaeological investigations in an attempt to provide a more detailed examination of lithic materials from pre-ceramic Panama. Unfortunately the poor quality of the plates in this paper detracts from the overall presentation, although the line drawings compensate somewhat for this flaw.

Also included in this section is an excellent summary of past and present evidence to support the pre-projectile point, or trimmed-core tradition, in the New World presented by Don Dragoo. Finally, although not strictly adhering to the subject of lithic technology, George Miller's paper offers a valuable lesson to be learned from an examination of cuts, grooves, and marks on recent and fossil bone remains.

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The comments of Joffre Coe and Jeremiah Epstein, and the participants replies, comprise the final section of this book. It is most unfortunate that more time at the Congress was not available for this session as few of the questions raised by the papers are answered in the brief discussion. In general it is a disappointing conclusion to this volume in view of the preparation for the meetings and the potential of the approach taken by the Congress.

SHEILA COULSON

WATKINS, T. (ed.) *Radiocarbon: Calibration and Prehistory*. University Press, Edinburgh, 1975. vi + 147 pp., figs & tables. £3.50.

Archaeologists who base their chronologies on C^{14} dates will find this 1974 symposium a helpful guide to the complications of conversion.

Prehistoric C^{14} dates (bp) were soon found to be much older than archaeologists such as Childe has expected – this was the first Radiocarbon Revolution of the 1950s. Then new C^{14} dates were then still found to be younger than the true tree-ring dates (BP). Different authors have suggested various values for the correction from one scale to the other, and in McKerrell's Appendix I (pp. 110–127) the alternatives are fully set out in a series of tables. These tables are in some way still baffling, for, because of the problematical 'wiggles' in the Radiocarbon curve, 1 radiocarbon date can sometimes correspond to 3 alternative tree-ring dates. The 'wiggles' were first included in the curve of Suess, distributed at INQUA in 1969, and at that time aroused much criticism from those who thought any curve based on inadequate evidence should be smoothed. Suess had a hunch that some at least were real, and indeed some of these wiggles have since been confirmed by other writers; the reviewer suggested at the 1969 Royal Society Conference that the veracity of wiggles might be tested if we could assume that true dates were evenly distributed in time, for then each wiggle would correspond to a cluster of C^{14} dates. This assumption has been successfully used here by the Ottaways (see their Table 1, p. 36), whereas a new and improved calibration table (R. M. Clark in *Antiquity*, 49, 1975, p. 264–5), derived from replicated measurements and using spline functions, likewise confirms certain other wiggles. A full report from Professor Suess himself on the individual irregularities is expected shortly. Radiocarbon dates bp near 870 (i.e. AD 1200), 1620, 2175, 2465, 2625, 2900, 3181, 3370, 3540, 3800, 4465, 4675, 5350, 6030, 6595, 6965, 8700, 10175 and 10990 should meanwhile not be converted uncritically as if chronologically precise. Some of these irregularities correspond to warm centuries as the Ottaways claim, although organic samples are then likely to produce a cluster of dates in any case.

Other articles especially useful for archaeologists here include one on Tree-Rings (Fletcher) and another explaining how an archaeologist should select and submit his sample (Harkness). One problem highlighted in the tables (pp. 57–9, Tables 15–29, p. 74, p. 96) is that of discrepancies between the accepted Egyptian chronology and the tree-ring corrected dates. This was regarded as indicating that the bristlecone pine dates are not representative in some way (cf. p. 3), but the reviewer wonders whether some of the Pharaohs of the second millennium BC belong to an earlier century than usually supposed. Egyptian dates around 2000 BC are, nevertheless (at 1872 BC \pm 20) astronomically confirmed, although the C^{14} evidence suggests they ought to be 2 centuries earlier, and the volcanic eruption of Thera likewise appears to belong (cf. p. 43) – using American calibrations – to about the 18th rather than about the 15th century BC. A calibration curve based on Old World trees is expected to be available soon, but as yet we have no reason to expect any differences between corrections based on bristlecone pine in America, oak in Ireland or juniper in the Middle East, and a direct dendrochronological date for at least the Thera eruption could be made from a microscopic examination of Asia Minor tree-rings.

D. J. SCHOVE

CLASON, A. T., (ed.) *Archaeozoological Studies*. North Holland Publishing Company – Amsterdam, Oxford. 1975. xv + 477 pp., Figures, Plates, Index. Dfl. 135.00.

This collection of 48 papers is the result of the 1974 Archaeozoological Conference held at the Biologisch–Archaeologisch Instituut at Groningen. The book covers a very wide field and it is only possible to give a general impression of the content in a medium-length review.

In her introduction the editor regards the breadth of coverage of the papers as a good sign of the status of archaeozoology as a science in its own right. I feel that this could have been better shown had the conference been orientated towards a particular theme. Although the book is divided into a number of sections some of these are highly heterogeneous (part 6, for example, deals with 'Stock-breeding and hunting from archaeological sources, animal traction, pathological changes, and animals as grave gifts') while some papers are either misplaced in their sections or do not fit into the

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sectional scheme at all. For example, Dr Alur's paper on faunal studies, itself an exceedingly inaccurate and confused contribution, is included in part 6 rather than in part 1.

It is pleasant to see that fish and molluscs are now admitted to the animal kingdom and are, therefore, legitimate subjects for archaeozoological study (see the papers by Casteel and Voigt). May we hope that the insects will also attain this status in the near future? Naturally, the vast majority of the papers deal wholly with mammals. Nevertheless, the coverage is impressive. From Palaeolithic to Medieval, from Sweden to Oceania, from molluscs to castrated sheep, and from Iron Age cookery to the protection of present-day cattle breeds. There is something here for everyone but I wonder how many will want all of it, particularly at the price. Certainly, all archaeozoologists will want to read those parts of relevance to them and the book is an obvious 'must' for archaeological and zoological libraries.

Not surprisingly, in a book of this type, the quality of the papers varies enormously. Payne's contribution on bone recovery and sample bias is very interesting and a warning to those who hand-pick their bone samples. Other interesting contributions are by Clutton-Brock on data retrieval, Noe-Nygaard on bone injuries caused by hunting, Voigt on shell middens and Bökönyi on dogs, to name a few. On the other hand, some of the papers are very narrow and dull in their approach to their subject, being more like the often tedious 'specialist reports' secreted in appendices to excavation reports. Someone should start an 'Archaeozoologists' Newsletter' for the dissemination of turgid data.

In spite of such exceptions, the editor is to be congratulated on the speed with which she has brought these papers together for publication. The whole book is very well produced with few printing or spelling errors. The papers in French and German have convenient English summaries. The book, however, is not quite complete. In her introduction, Dr Clason extolls Professor Boessneck's inaugural address (a review of methods and problems) but, alas, the text of this is not published. This is a pity because, with a few excellent exceptions, most of the contributions are rather narrow and site-orientated in their approach. Thus, we are presented with a mass of data which has little coherence. On this evidence, can archaeozoology really be called a branch of science in its own right?

KENNETH THOMAS

GODWIN, Sir Harry. *History of the British Flora*. 2nd edition. Cambridge, the University Press, 1975. x + 541 pp., £30.

The History of the British Flora has been the standard work in this field since it first appeared in 1956. In the intervening years there has been almost an explosion of research work in this young subject, stimulated in no small measure by Sir Harry Godwin himself, so much so that there was a fear that if the 2nd edition did not appear soon it would be overtaken by events.

Now that we have it we can only stand amazed at the amount of work the author has put into the revision; the first edition is now completely obsolete. The same pattern of chapters has been kept but all have been considerably expanded and brought up to date. As a result we now have authoritative treatment of a number of difficult and controversial subjects; a good example is the treatment of recurrence surfaces. The section on archaeology, however, remains somewhat perfunctory, though in the chapter on pattern of change (Ch. VI) prehistoric husbandry is covered by a full discussion which will be of great value to prehistorians. The archaeological botanist will find that pollen analysis still dominates the author's outlook, whilst the analysis of other types of botanical evidence, despite their increasing contributions, is dealt with as briefly as in the first edition. The useful charcoal identification key is not included in this edition.

The greatest change in the new edition, however, is a completely new presentation of the Plant Record. The old form of diagram illustrating the known British history of the taxa is replaced by a new type covering the whole Pleistocene period. In fact the greatly increased volume of information about our Pleistocene floras is one of the most impressive developments of the book. There is also an increased attention to the plant geography of many taxa, and this has resulted in the addition of many figures showing distribution maps. This key section of the book cannot be given justice in a review; the proof of its value is soon apparent when one starts to use it. The longer treatises on critical genera such as *Ulmus*, *Fagus* or *Pinus* are invaluable.

A few minor blemishes must be laid at the author's door. Does *Tilia* really prefer fertile mor (sic.) soils? And what has gone wrong with the boundary lines in Fig. 158? Was it the author or the publishers who took the decision to use exactly the same plates as in the first edition, despite the fact that modern improvements in microscopic techniques (including the electron-scan microscope) and photomicrography make some of them look antiquated? The same could be said of some of the line drawings: Fig 23 was originally published in 1934. The reproduction of some of the diagrams re-used in this edition compares very unfavourably with their quality in the first edition.

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Such inadequacies might have been acceptable as an economy measure designed to keep the price of the new edition within reach of the customer. The first edition cost 90 shillings, the second £30.

Escalation in price of this order (even allowing for the changed value of money) is now a feature of the book world. In effect, the higher the price the more diminished becomes the value of publication, particularly regrettable with regard to a book of this importance.

G. W. DIMBLEBY

GODWIN, Sir Harry and VISHNU-MITRE. Studies of the Post-glacial history of British vegetation XVI. Flandrian deposits of the fenland margin at Holme Fen and Whittlesey Mere, Hunts. *Phil. Trans. Roy. Soc. B* 270 561–608.

This monograph records the palaeoecological investigation of 2 well-known fen-land sites, both drained, but still much visited by students and others. The complex topography and associated deposits, both inorganic and organic, is demonstrated in detail, and a series of pollen profiles for both sites produced, each extending back into the Atlantic period (pollen zone VIIa). Of particular interest here is the high representation of *Tilia* pollen at both sites, in each case persisting into the VII/VIII boundary, though at reduced levels.

These pollen profiles cover the beginnings of prehistoric farming and show beautifully the classic sequence of the elm decline followed by the succession of agricultural weeds. Particular comment is made on the occurrence of thin clay layers intercalated into the raised bog peat of Holme Fen. These are attributable to the Bronze Age, c. 1400 bc and are regarded as the effect of soil erosion and flooding associated with Middle Bronze Age clearance. Though it is said here that parallel instances are not uncommon in the pollen-analytic literature, it is particularly useful to have this example associated with such a long and detailed record of land use throughout the prehistoric period as that provided by this investigation.

G. W. DIMBLEBY

HUTCHINSON, J. *et al.* (eds.) The Early History of Agriculture. *Phil. Trans. R. Soc.* 275, London, 1976. 213 pp. £2.75.

This volume of papers contains the proceedings of the 3rd discussion meeting held in April 1975 organised jointly by the British Academy and the Royal Society. The purpose of the meeting was to discuss the early history of agriculture from the viewpoint of archaeology and the biological sciences including botany, zoology and ecology, and to present recent thinking of scholars working in these fields.

The papers cover many topics, including plant and animal domestication and food production in the Americas, south-west and south-east Asia, India, Europe and the Mediterranean, and the changes brought about in plants by domestication.

The overall impression given by the volume is that archaeology and biology have a great deal to offer each other. It is perhaps obvious that biologists can assist archaeologists in the identification of plant and animal remains and in determining the probable wild ancestors of cultivated and domesticated species. But, as pointed out in the article by B. Pickersgill and C. B. Heiser, the material excavated by archaeologists makes it possible for the biologists to trace the evolution of plants and animals during domestication and so provide information which may be useful in the developing of new crops and breeds.

The wide range of the meeting is illustrated by the inclusion of papers on the agriculture of India and on those cultures dependent on rice. These areas have tended to be overshadowed by the better-known centres of south-west Asia, America and Europe and such papers help to rectify this situation.

One paper which I am particularly pleased to see included is A. Steensberg's *The Husbandry of Food Production*. The study of tools and the purposes for which they were used is often only carried out in a general way. For example tools may be classified as being used for 'cultivation' or for 'harvesting', but a closer study of such tools and the actual manner in which they were used can provide a great deal of information about the various forms of agriculture. A. Steensberg has studied agricultural tools and their use for many years and the continuation of work such as this is of value to the history of agriculture, both in its early and its developing stages.

E. R. ELLISON

BOOK REVIEWS

LIMBREY, Susan. *Soil Science and Archaeology*. London, Academic Press, 1975. xv + 384 pp., 36 figs. £8.40.

In her book, Dr Limbrey has wisely avoided becoming embroiled in lengthy and detailed description of field and laboratory technique; she has instead chosen to deal with the subject by detailing the various factors of soil formation, soil history and the appearance of soils in the field. The book concludes with a section which is concerned with aspects of soil science that are specific to archaeology.

The opening of the book is a very full, though perhaps somewhat daunting, introduction to the components and processes of soils. This is followed by 2 sections in which soil typology and history are discussed. These sections are, on the whole, informative; however, in the chapters concerned with the history of British soils, Dr Limbrey has failed to use archaeological examples to their greatest advantage and perhaps too much emphasis is placed upon evidence provided by pollen, mollusca etc. More useful would be reasoned analysis of the evidence provided by the nature of the soils themselves.

The final section, entitled *Soil and the Archaeologist*, will be a disappointment to many who had hoped for more detailed archaeological examples; as in the preceding sections, adequate examples of the appearance and subsequent interpretation of soils are rare. However, the section does include a chapter on the study and description of soils in the field which should be of great use to many archaeologists.

Despite the book's promising title, Dr Limbrey has not presented a clear statement of the type of information that an archaeologist can or cannot expect to obtain from a detailed study of excavated soils. It is also a pity that the value of chemical and physical analysis of soils and sediments is not discussed, although one could not expect these to be dealt with exhaustively in this volume. Furthermore, the illustrations, which should play such an important part, are unfortunately often of a very poor standard.

However, Dr Limbrey's approach to the subject has much to recommend it for she does not avoid the minutiae which are so essential to a full understanding of the topic. The book contains much information and will be of value to many archaeologists.

N. D. BALAAM

RACKHAM, O. *Trees and Woodland in the British Landscape*. London, J. M. Dent and Sons Ltd., Archaeology in the Field Series. pp. 204., 28 figs., 14 plates. £4.95.

This is a most important book, and it is significant that it is addressed to archaeologists. Its scope includes all trees and woods that 'provide evidence of the activities and environment of the men of past centuries'. This automatically excludes short-term plantations (that is, most commercial forestry), and the trees and gardens and towns. There are woodlands in this country which appear to be in direct lineage from the original forest cover of the country. In view of the ambiguity of the word 'forest', the author refers to this original state as Wildwood and his observations on wood derived from it are of great ecological interest. Other ancient woods, perhaps on land which has never been totally cleared of trees, may have been managed for timber, for underwood, or for woodland pasture, and these can sometimes be traced back to pre-Roman times.

Dr Rackham has given a manual for the recognition and interpretation of the archaeology of woodlands, and in doing so he has scotched many of our assumptions about man's impact on his wooded landscape. He remarks on the achievement of our prehistoric ancestors in converting millions of acres of forest into farmland; we still do not know how they did it. In Roman times the supply of timber and clearance were probably 2 independent processes, and our common assumption that the provision of wood and charcoal for iron smelting destroyed the woodlands is belied by the fact that the industry survived much longer than it could have done had no woodland replacement been taking place. Agriculture was more destructive of woodland in medieval times, and in particular the Cistercian sheep pasturing in the remote areas of the west and north.

An ancient wood can be compared to an ancient building such as a church. Each period has left its mark for us to read. In the woods our evidence may be in the form of boundary banks, soil marks, ridge and furrow, lynchets, saw pits and charcoal pits. The living component may also give us help; certain plants are good indicators of early events, and the form of the trees (pollards, coppice, etc) can reflect treatment in medieval times. The author believes that 1 ash stool, still very much alive, is well over 1000 years old and probably the oldest living thing in Britain.

We are given an enthralling account of the varied uses of woods through the ages and how these uses have modified the woodland features. It is not generally realised that many of our woods had the same, or only slightly modified, boundaries in 1900 AD as they had 650 years earlier. But what makes this book so important and timely is that the period of greatest irreparable damage to the woodlands is

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the last 30 years; greater damage has been inflicted on some important ancient woods in this period than in the whole of the preceding 400 years.

The agents of this destruction are not urban, industrial or road development, as in our towns, but modern rural land use. Ironically, forestry is the greatest culprit, followed by agriculture. The author shows how the strong-arm methods of 'coniferisation' are aimed at destroying the previous woodland so that it does not become a nuisance in the new crop; and he comments that this destruction of historical woods was unnecessary. Nevertheless, it still goes on and has already created what is in effect an archaeological rescue situation. 'Even a derelict Bury St. Edmunds Abbey wood is as much an ancient monument as are the abbey ruins which the Department of the Environment lovingly maintains.' Some woods are being conserved by the Nature Conservancy Council and local Naturalists' Trusts, but this is usually on natural history grounds. There is a strong case here for archaeology to add its weight to their efforts by the equivalent of scheduling some of these irreplaceable remains. Dr Rackham has done a great service in drawing our attention to this side of our archaeological heritage. I only hope this book has not come too late to stop modern Britain from further vandalising its rapidly diminishing links with the past. As Dr Rackham says, 'Woods are historical documents that should be read before somebody burns them.'

The book is in a pleasant format and reasonably priced but sections of the text are marred by a plethora of missing or misplaced letters. Some of the line illustrations by the author are delightful.

G. W. DIMBLEBY

SELLEY, R. C., *An Introduction to Sedimentology*, London, Academic Press, 1976. xi + 408 p., 162 figs. £5.90 paperback.

This text provides an overview of the whole field of sedimentology. Its framework is logical and clear and is set out in the introduction. In the first half of the book, the physical properties of sediments are reviewed followed by the genesis and classification of sedimentary rocks. The second half of the book deals with sediment transportation, structures and environments. There is a final chapter on applied sedimentology.

The book is well written in a readable style and is largely qualitative in approach. Although it is written mainly for students of geology, it emphasises the interrelationships of sedimentology with the other natural sciences. There are many well annotated diagrams and maps, although there are no photographs which would have been an invaluable addition as a practical aid to identification and recognition.

The understanding of the basic principles of sedimentology is vital for the environmental archaeologist, and the section on particle size properties of sediments is useful since it explains methods of statistical analysis. The chapter on weathering is straightforward and explained in non-scientific terms, which, unfortunately, results in an oversimplification of the weathering processes. However, the most useful section of the book is the chapters concerning sedimentary structures and environments, which are of direct relevance to environmental archaeology. These chapters include clear explanatory diagrams which complement the informally written text.

In conclusion therefore, archaeologists with an environmental interest will find this book a useful review text for all aspects of sedimentology. Archaeologists from other disciplines will also find that it provides basic and readable information on the nature and properties of natural deposits.

T. P. TAYLOR

TAYLOR, C. *Fields in the English Landscape*. London, Dent, 1975. 174 pp., 12 plates and numerous text figs. £5.95.

There cannot be many occasions on which a writer has taken the simplest units possible, written a book about them, and, at a stroke, made them interesting, important and informative. When the book is archaeological, and makes the reader want to go straight out into the field to put what he has read into practice, there might be signs of alarm from the purists, were it not for the fact that such work could at best be very useful indeed and at the worst could do no damage at all. All these conditions are fulfilled in Mr Taylor's excellent introduction to English fields and field systems. This is a book which ought to be compulsory reading for all planners, all agricultural students, and those archaeologists who are more interested in people and places than things.

The study unfolds chronologically which is a little unfortunate as the first, the prehistoric, chapter is the least satisfactory. Evidence spanning 2 millennia, if not more, has obviously been difficult to organise, is obviously rather scrappy, and has rather obviously not been completely worked over in this way before. The most unsatisfactory points are the 'archaeologists' who make their appear-

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ance on nearly every page doing abstruse things. These points are completely ironed out in all later chapters where 'we' can see this, or can say that, or have done the other.

The Roman chapter is a superb breath of fresh air for which all students of Roman Britain ought to be very grateful. It starts at the right point, in the fields, and it proceeds to make nonsense of Classically minded estimates of the population of the Roman Province, erroneously based as they are, on the cities and the army, with the farmers as no more than subsidiary food-producers.

From here on Mr Taylor is very much on his own ground and he carries us painlessly through to the present century on which a last chapter could be a morose retreat, but is, in fact, a realistic, yet hopeful look forward.

RICHARD REECE

BOOKS RECEIVED

The following books have been received. The fact that they are listed here does not preclude their review in a later issue.

- BARLOW, Frank, et al. *Winchester in the Early Middle Ages: an edition and discussion of the Winton Domesday*. Edited by Martin Biddle. (Winchester Studies 1). Oxford, Clarendon Press, 1976. xxxi + 612 pp., 33 figs., 56 tables, 11 plates. £32.00.
- BICCHIERI, M. G. *Hunters and Gatherers Today: a Socioeconomic Study of 11 Such Cultures in the 20th century*. New York, Holt, Rinehart and Winston, 1972. vii + 494 pp., figs. Price not stated.
- BROMMELLE, N. and SMITH, P. (eds.) *Conservation and Restoration of Pictorial Art*. London, published for the International Institute for Conservation of Historical and Artistic Works, by Butterworths, 1976. 270 pp., illus. £18.00.
- BUSVINE, J. R. *Insects, Hygiene and History*. London, Athlone Press, 1976. 262 pp., figs. £6.95.
- CHENHALL, Robert G. *Museum Cataloging in the Computer Age*. Nashville, Tenn., American Association for State and Local History, 1975. viii + 261 pp., 118 figs. \$6.75.
- CLAIRMONT, C. W. *Excavations at Salona, Yugoslavia (1969-1972)*. Park Ridge, N.J., Noyes Press, 1976. 236 pp., 60 figs., 64 plates. \$36.00.
- COLLEDGE, M. A. R. *The Art of Palmyra*. London, Thames and Hudson, 1976. 320 pp., 66 figs., 150 plates. £16.00.
- COTTRELL, L. *Reading the Past: the story of deciphering ancient languages*. Aldine Paperback. London, Dent, 1977. 182 pp., illus. £0.75.
- DAVARES, C. *Guide to Cretan Antiquities*. Park Ridge, N.J., 1976. 370 pp., 198 figs., 7 maps. \$18.00.
- DAVIDSON, D. A. and SHACKLEY, M. L. (eds.) *Geoarchaeology: Earth Science and the Past*. London, Duckworth, 1976. x + 408 pp., illus. £14.00.
- DUVAL, P. M. and HAWKES, C. (eds.) *Celtic Art in Ancient Europe: 5 Protohistoric Centuries*. London, Seminar, 1976. 316 pp., illus. £12.80.
- FLACELIERE, R. *Greek Oracles*. London, Elek Books, 1965. 92 pp., 16 plates. £3.95.
- FLANNERY, K. V. (ed.) *The Early Mesoamerican Village*. (Studies in Archaeology). London, Academic Press, 1976. 377 pp., illus. £8.40.
- FLEMING, S. J. *Authenticity in Art: the Scientific Detection of Forgery*. London and Bristol, Institute of Physics, 1975. 164 pp., illus. Price not stated.
- FORD, T. D. and CULLINGFORD, C. H. D. (eds.) *The Science of Speleology*. London, Academic Press, 1976. 593 pp., illus. £14.00.
- FRANK, Karl, *A Sturm aus Atlantis: das Abenteuer einen neuer Urgeschichte*. Düsseldorf, Hoch. Verlag, 1975. 224 pp., illus. Price not stated.
- FRANKEN, H. J. and KALSBECK, J. *Potters of a medieval village in the Jordan Valley: Excavations at Tell deir 'Alla: a medieval tell, Tell Abu Gourdan, Jorddan*. Amsterdam, North-Holland Publishing Co., 1975. xvi + 223 pp., 77 figs., 3 plates. \$20.95. (DM. 50.10).
- FRITSCH, C. T. et al. *The Joint Expedition to Caesarea Maritima. Vol. 1. Studies in the History of Caesarea Maritima*. (Bulletin of the American School of Oriental Research: Supplemental Studies 19). Missoula, Montana, Scholars Press, 1975. 122 pp. Price not stated.
- FROOM, F. R. *Wawcott III: a stratified Mesolithic succession*. (B.A.R. 27). Oxford, British Archaeological Reports, 1976. 209 pp., 85 figs. £3.90.
- GREENHILL, B. *Archaeology of the Boat: a new introductory study*. London, Black, 1976. 320 pp., 213 figs. £7.50.
- HALL, A. R. and SMITH, N. (eds.) *History of Technology*. First Annual Volume, 1976. London, Mansell 1976. 186 pp., illus. £9.75.
- HARDAKER, R. *A Corpus of Early Bronze Age Dagger Pommels for Great Britain and Ireland*. (B.A.R. 3). Oxford, British Archaeological Reports, 1974. 65 pp., 7 figs, 2 plates. £0.80.
- HARDING, D. E. (ed.) *Hillforts: later prehistoric earthworks in Britain and Ireland*. London, Academic Press, 1976. 579 pp., figs and plates. £24.00.

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- HERITY, Michael and EOGAN, George. *Ireland in Prehistory*. London, Routledge and Kegan Paul, 1977. xi + 302 pp., 99 figs., 16 plates. £8.95 (£9.85 in Republic of Ireland).
- HOOKER, J. T. *Mycenaean Greece*. London, Routledge and Kegan Paul, 1977. xiii + 316 pp. £6.50.
- HUDSON, K. *Industrial Archaeology: a new introduction*. 3rd edition. London, John Baker, 1976. 240 pp., illus. £6.25.
- HUDSON, K. *A Pocket Book for Industrial Archaeologists*. London, John Baker, 1976. 134 pp., illus. £2.25.
- HUGHES, C. P., INGHAM, J. K. and ADDISON, R. The morphology, classification and evolution of the *Trinucleidae* (*Trilobita*). London, *Philosophical Transactions of the Royal Society of London*, B. Biological Sciences. Vol. 272, No. 920, pp. 537–607, 123 figs. London, Royal Society. £4.05.
- JENKINS, F. A. and PARRINGTON, F. R. The postcranial skeletons of the Triassic mammals *Eozostrodon*, *Megazostrodon* and *Erythrothium*. *Philosophical Transactions of the Royal Society*, B. Vol. 273, No. 926, pp. 387–431, 20 figs. London, Royal Society, 1976. £3.65.
- JONES, B. J. *Roman Fort Defences to AD 117, with special reference to Britain*. (B.A.R. 21). Oxford, British Archaeological Reports, 1975. 192 pp., 21 figs., 6 plates, 1 map. £3.90.
- JORDAN, P. *Egypt, the Black Land*. Oxford, Phaidon, 1976. 207 pp., illus. £6.00 cloth, £3.50 paperback.
- KOCHAVI, M. and BECK, P. Apek-Antipatris, 1972–1973. The first 2 seasons of excavation at Apek-Antipatris, preliminary report by Moshe Kochavi. The pottery of the Middle Bronze Age IIA at Tel Apek by Pirhiya Beck. Reprinted from *Tel-Aviv*, 2 (1975), Nos. 1–2, pp. 17–84, 16 figs., 13 plates. Price not stated.
- KRASKOVSKA, L. *The Roman Cemetery at Gerulata Rosovce, Czechoslovakia*. (B.A.R. Supplementary Series 10). Oxford, British Archaeological Reports, 1976. 84 pp., 85 figs., 6 plates. £2.50.
- LAKE, F. and WRIGHT, H. *Bibliography of Archery*. Manchester, Simon Archery Foundation, 1974. 501 pp. £10.00.
- LEEKLEY, D. and NOYES, R. *Archaeological Excavations in the Greek Islands*. Park Ridge, N.J., Noyes Press, 1975. 130 pp. \$15.00.
- LEEKLEY, D. and NOYES, R. *Archaeological Excavations in Southern Greece*. Park Ridge, N.J., Noyes Press, 1977. 150 pp. \$15.00.
- MATTHEWS, C. L. *Occupation Sites on a Chiltern Ridge: Part I: Neolithic, Bronze Age and Early Iron Age*. (B.A.R. 29). Oxford, British Archaeological Reports, 1976. 208 pp., 123 figs., 9 plates. £3.90.
- MEGAW, J. V. S. (Ed.) *To Illustrate the Monuments: essays in archaeology presented to Stuart Piggott on the occasion of his 65th birthday*. London, Thames and Hudson, 1976. 332 pp., illus. £15.00.
- PERCIVAL, J. *The Roman Villa: a Historical Introduction*. London, Batsford, 1976. 230 pp., 59 figs. £10.00.
- RACKHAM, O. *Trees and Woodlands in the British Landscape*. London, Dent, 1976. 204 pp., 27 figs., 14 plates. £4.95.
- REECE, R. and CATLING, C. *Cirencester: the Development and Buildings of a Cotswold Town*. (B.A.R. 12). Oxford, British Archaeological Reports, 1975. 78 pp., frontispiece and 11 figs., 9 plates. £1.50.
- RIXON, A. E. *Fossil animal remains: their preparation and conservation*. London, Athlone Press, 1976. 304 pp., 35 figs., 13 plates. £5.25.
- SAUTER, M. R. *Switzerland from earliest times to the Roman conquest*. London, Thames and Hudson, 1976. 208 pp., 53 figs., 87 plates, 9 maps. £8.50.
- SALDERN, A. von, et al. *Gläser der Antike: Sammlung Erwin Oppenländer*. Mainz, Phillip von Zabern, 1974. 260 pp., illus. DM 80.00.
- SEDGLEY, J. P. *The Roman Milestones of Britain: their Petrography and Probable Origin*. (B.A.R. 18). Oxford, British Archaeological Reports, 1975. 56 pp., 5 figs. £1.00.
- SIEVEKING, G. de G., LONGWORTH, I. H. and WILSON, K. E. (eds.) *Problems in Economic and Social Archaeology*. London, Duckworth, 1976. xxvi + 626 pp., illus. £24.00.
- TRIGGER, B. *Nubia under the Pharaohs*. London, Thames and Hudson, 1976. 216 pp., 43 figs., 74 plates, 10 maps. £8.50.
- WARDMAN, Alan. *Rome's Debt to Greece*. London, Paul Elek, 1976. xix + 201 pp. £5.50.

Notes to Contributors

Papers on any aspect of archaeology may be considered for publication in the *Bulletin*. All contributions and related correspondence should be addressed to the Editor, Professor J. D. Evans, Institute of Archaeology, 31–34 Gordon Square, London WC1H 0PY. The following notes are provided as a guide to intending contributors in the preparation of their material.

1) *Typescripts* should not normally exceed 10,000 words in length. They should be typed on one side only of A4 size paper (approx. 30 cm. by 21 cm.), using double spacing and leaving wide margins (at least 4 cm. on the left). Two copies of the typescript should be submitted, the author retaining a third copy.

2) *Footnotes* should be avoided as far as possible. If any are judged to be absolutely necessary, they should be typed on a separate sheet, not at the foot of the page to which they refer.

3) *Bibliographical references* should follow the so-called Harvard system. The author's last name, date of publication and number of page should be given in brackets in the body of the text, e.g. (Sharma, 1973: 129), or, if the author's name has been cited, simply (1973: 129). Full references should be listed alphabetically according to authors' names at the end of the paper. Where the publication cited is a paper in a periodical the title of the journal should be underlined and abbreviated according to the *World List of Scientific Periodicals*.

e.g. Paper: Sharma, G. R. 1973. Mesolithic lake cultures in the Ganga valley, India. *P.P.S.*, 39: 129–146.

Book: Butzer, K. W. 1972. *Environment and Archaeology*. London: Methuen.

Article in Book: Bordes, F. 1973. On the chronology and contemporaneity of different palaeolithic cultures in France. *The Explanation of Culture Change: Models in Prehistory* (ed. Colin Renfrew). London: Duckworth.

4) *Line drawings, plans and maps* should be drawn in waterproof black ink on smooth white paper, card, or good quality tracing paper or film. Lettering should be neatly done, either by stencilling or using self-adhesive lettering such as Letraset or Presletta, which should be varnished with the spray recommended by the makers to prevent damage. All line illustrations should be at least twice the intended final size, and of a shape suitable for reduction to full page (17 cm. × 12 cm.) or half page (8 cm. × 12 cm.) size. Line illustrations should be referred to as *figures* and numbered in Arabic numerals. The number should be written on the originals in soft pencil, and should correspond to bracketed references in the text, e.g. (Fig. 3).

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5) *Photographs* should be printed on glossy paper and preferably be full plate or half plate size, depending on the subject and the intended final size. They should be referred to as *plates* and numbered in Roman numerals. The numbers should be written in soft pencil on the back in one corner, and correspond with bracketed references in the text, e.g. (Pl. IX).

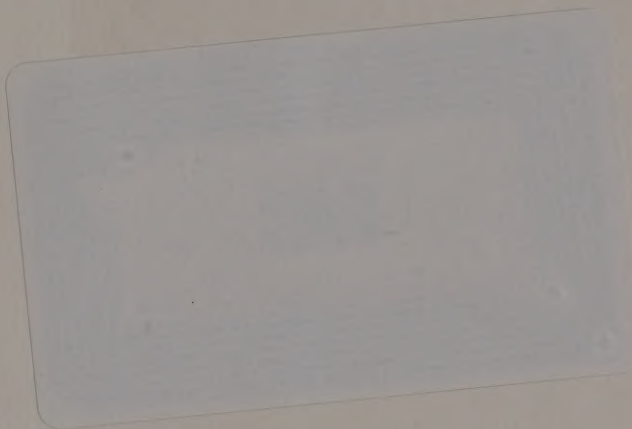
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7) *Captions* to all figures, plates and tables should be listed on a separate sheet, and should be kept as short as is consistent with clarity.

8) *Radiocarbon dates* should be cited uncalibrated, using the convention bp, bc, ad to show that this is so. If calibrated dates are also presented, the convention BP, BC, AD should be used. Standard deviation and laboratory code should always be given.

9) *Abstracts*: a brief résumé of about 100–150 words should be supplied with each contribution, and will be printed at the end of the text.

10) *Submission date*: articles should be received not later than 1st October for inclusion in the following year's *Bulletin*. Articles will not be accepted unless complete with all illustrations, captions, etc. Twenty-five offprints of each paper published will be supplied free to the author. Additional offprints may be purchased at cost price; estimates of cost can be obtained on application.



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